

MOTOR AGE

Vol. VIII. No. 13

CHICAGO, SEPTEMBER 28, 1905

Ten Cents a Copy



SIX DAYS' WORK OF A PACKARD 1½-TON TRUCK

Traveled 319½ miles. Delivered
62,685 pounds of merchandise, to
209 different addresses, in 28 hours
26 minutes actual running time
Average load per trip, 3482½ pounds
Average length of trip, 17.73 miles
Average miles per hour, 11.2
Miles per gallon of gasoline, 10½

A two-horse team to do the same
work would require 18 days.

The conclusion is obvious.

PACKARD MOTOR CAR CO.
DETROIT, MICH. Dept. 2. Member A. L. A. M.
N. Y. Branch, Packard Motor Car Co. of New York
1540-2 Broadway

Packard

W. W. LEATHERS & CO.

ARE THE EXCLUSIVE AGENTS FOR "THE INCOMPARABLE WHITE" TOURING CAR IN ST. LOUIS.

They do a big business.

Nearly everyone in St. Louis and vicinity who is at all interested in motoring knows them.

It appears that occasionally tires go to the bad on White cars much the same as they do on other machines.

And thereby hangs this particular tale.

W. W. L. & Co. have discovered that the use of MORGAN & WRIGHT tires saves their firm a whole lot of trouble and at the same time make doubly fast friends of the users of "the incomparable White."

After proving this to their entire satisfaction for a year or more, they wrote to the manufacturers the other day stating:

"It has been our pleasure the last two seasons to replace several sets of tires with Morgan & Wright's, and we are pleased to state that we have our first complaint to make.

"In view of the satisfaction given in the past, we would be pleased to have you equip a part of our shipment of White cars with Morgan & Wright Tires."

All of which shows which way the wind is blowing.

Test tells.

MORGAN & WRIGHT TIRES
ARE GOOD TIRES

MORGAN & WRIGHT

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MOTOR AGE

VOL. VIII. No. 13

CHICAGO, SEPTEMBER 28, 1905

\$2.00 Per Year

AMERICA'S VANDERBILT TEAM SELECTED



MRS. W. K. VANDERBILT AND PARTY IN BOX

New York, Sept. 25—Special telegram—A. L. Pope's 60-horsepower Pope-Toledo, Dr. H. E. Thomas' 120-horsepower Locomobile, E. D. Shurmer's 40-horsepower Royal, Elwood Haynes' 50-horsepower Haynes and H. S. Houpt's 60-horsepower Thomas finished in the first five positions in the eliminating trials Saturday to select a team to represent America in the international race for the Vanderbilt cup race, to be run over the 283-mile course on Long Island, 113.2 miles of which were used in the preliminary contest. Bert Dingley drove the winning car in 2 hours 50 seconds, while Joe Tracy was second in 2 hours 1 minute 49 seconds. Jardine did 2 hours 19 minutes 49 seconds, Nutt 2 hours 23 minutes 32 seconds and Roberts 2 hours 29 minutes 40 seconds.

Ten cars started in the race but only five finished. Lytle's Pope-Toledo transmission went to pieces on the second circuit, the Franklin was put out by a punctured gasoline tank, the universal joint and brake band of the White broke, while the main bearing on the Matheson tightened so that Mongini had to retire before he had completed the first lap.

The bold and sensational action taken by the racing board at its meeting at the Automobile Club of America today in throwing out the Royal, Haynes and Thomas, and substituting the White, Christie and the Lytle Pope-Toledo, is sure to raise a tumult of mingled approval and censure in the world of trade and sport. There were present at the meeting Morrell, Vanderbilt, Green, Thomas, Weiss, Hilliard, Donald, Butler, Birdsell, Riker, Press, and Batchelder as secretary. In waiting outside were Charles A. Durr of the Royal, Harry S. Houpt and E. R. Thomas of the



W. K. VANDERBILT, JR.

Thomas, and V. E. Minnich and Frank Nutt of the Haynes interests. Thomas had submitted to the board a written statement of the performance of his car in the race and its condition after the event.

When a rumor filtered through the closed doors that the Royal, Thomas and Haynes had been turned down in favor of the Christie, White and six-cylinder Pope-Toledo, the representatives of the rejected ones hurriedly sent

AN EARLY MORNING SCENE AT THE START

in notes asking to be heard. Before any response to them came—and there was none whatever—Secretary Batchelder appeared and announced that No. 2 and No. 5—Dingley and Tracy—had been accepted as a result of the eliminating trial on Saturday and that Lytle, White and Christie had about been chosen, the last named on condition that he drive his car himself, to which he had given consent. Batchelder said that the board had no further statement to make and no reasons to give.

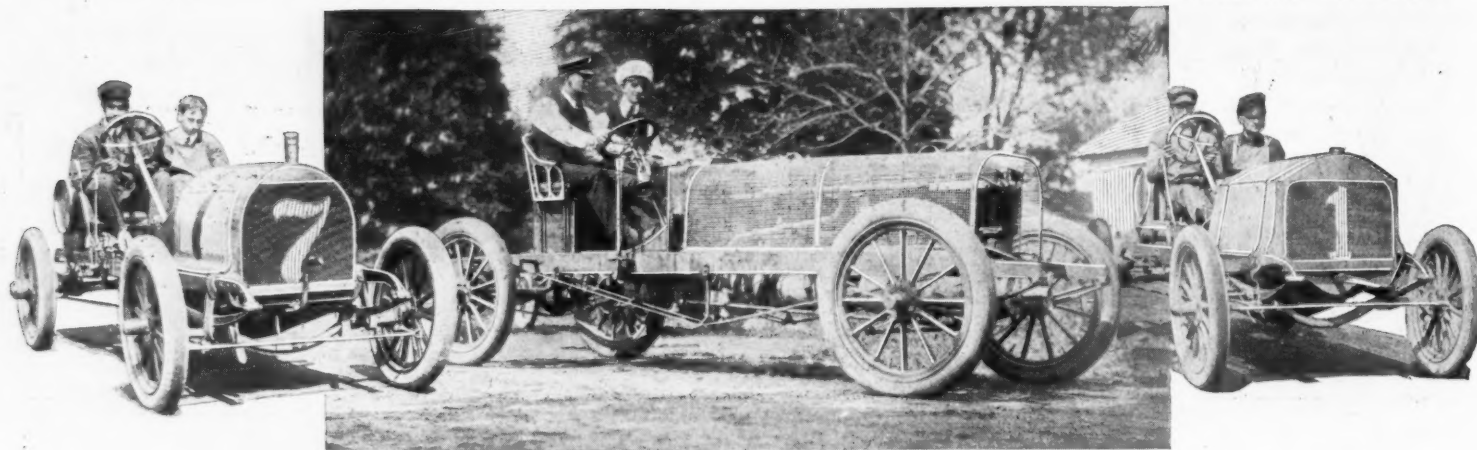
Chairman Morrell, however, was sought by a MOTOR AGE man and said: "It's no snap judgment. Before the matter was discussed or voted upon, at my request Mr. Breese and Mr. Riker left the room. Mr. Thomas presented a statement and I understood he also represented to some extent the others interested. The requests for a hearing were not received until a decision had been reached and the vote taken. Remember, we considered that we represented the American public. We felt it our duty to select the five cars which, in our opinion, were most likely to keep the Vanderbilt cup in this country."

There was intense excitement in the thronged rooms, for fully two score had assembled to have the verdict when the announcement was made. As was to be expected, the representatives of the rejected cars were highly indignant over the decision.

"Is the A. A. A. an association of sportsmen?" asked Minnich. "If they are sportsmen, why did they take our money, permit us to think that we had a fair opportunity to get into the final contest if every car proved worthy, and, when we won, throw us out without an opportunity to protest? If it was



BERT DINGLEY, FIRST TO FINISH



THE ROYAL

NEW FRANKLIN EIGHT-CYLINDER RACER

THE HAYNES

the intention to pick the team regardless of the results, as is evident from the outcome, why was the eliminating trial run? Was this done in the belief that we would enjoy the pleasant delusion that we had had a run for our money? This thing, first and last, has cost us at least \$2,500 in round numbers, and after winning a place we receive the pleasing information that we have been thrown out and cars that were unable to finish have been substituted. Why would not judgment and reason have dictated the wisdom of permitting three fast racing cars which finished to have represented the American team as racing cars, retaining the two touring cars, which won places, for the sake of the reliability in order that the American team might still have been represented, if the racing cars pounded themselves to pieces, as so frequently occurs, as was shown in the eliminating trials?"

Charley Durr said: "If the commission had any intention of deciding contrary to the result of the trial it would have been better for the commission to have saved a great deal of ridicule and criticism by choosing in advance five makers who were willing to build cars. It was demonstrated by several makers that there were regular cars, which, while not having so much speed, still could run 300 miles at a sufficiently high rate to have warranted their qualifying to the satisfaction of the purchasing public, if not the sports. The cars chosen in our places have had ample time to prepare. If they cannot go four laps, how can they go 300 miles?"

"I have nothing to say," said Houpt, who was at first speechless with indignation, but later added: "They have no right to take my \$500 and make me spend \$1,200 and then throw me out without a hearing. I have sent cars to Ormond and all the tracks to support the racing game and now they throw my car out without a blush."

E. R. Thomas said: "Not knowing how the commission could arrive at the decision it did, I am unable to arrive at any conclusion how it can possibly make substitution for those cars that won places on the team. As a matter of fact, I don't care how it can do so, as the Thomas showed splendid speed and perfect mechanism throughout the contest, the only trouble being due to a broken battery box. We beat the Locomobile's time in the first round. We lost 5 minutes by battery trouble in the second round, yet Tracy beat Roberts 4 minutes 35 seconds, which shows that we ran two laps faster than the winner of second place."

Outside opinion of the action of the commission varies. Some uphold it vigorously,

declaring that the entrance of touring cars merely on the chance of finishing in the event of the fast cars breaking down is unsportsmanlike and merely a gamble for possible advertising unworthy of the name of true sportsmanship. Others say that though they doubt the commission's right to take the action it did, they are glad the touring cars have been thrown out. They suggest that it would have been good sportsmanship for those interested to have withdrawn their cars, and good business policy to have rested on their honors, taken no further chance of a bad beating by the high-powered European flyers and left the public to applaud their magnanimity and remember their fine performances in the trial. Still others denounce roundly the action of the commission, declaring it had no right after a trial had been decided upon to substitute for the successful cars those that had failed. It is prophesied on one hand that this will prevent makers in general from entering cars for future races and on the other that it will put a stop to the entrance of stock cars on the chance of mishaps to those built to race, and so raise the standard of American sportsmanship in these international races.

When the commission made the final announcement of the running of the race it reserved the right to choose the cars, which in its opinion made the best showing in the race. Some maintain that these words, which are quoted from memory substantially as appeared in the announcement of the trial, gave the commission no right to go into the matter of opinion as to general merit beyond what the result of the race showed. Chairman Morrell told the writer, when the shortening of the course was being discussed, that the original entry blanks did not promise that the selection would be made by a speed contest and stated that as a matter of fact a long endurance run and private speed tests by members of the commission or open trials on a beach were for a long time seriously contemplated. There were

outcroppings, however, before the trials that indicated among several prominent members of the commission there was a strong feeling that the entrance of stock touring cars was unsportsmanlike and not in keeping with the true spirit of the race, which they regarded rather as a sporting than a mere trade demonstration or advertising event.

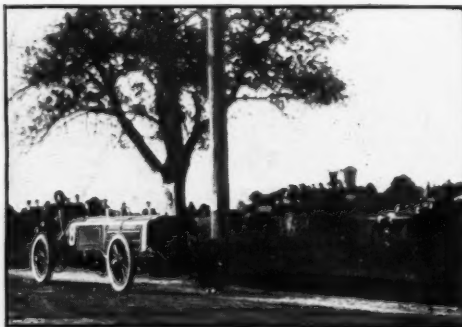
MOTOR AGE tells the story below of the trial and gives facts and figures on which the commission made its choice of the five cars to represent America as a team.

New York, Sept. 24—Uncle Sam made good in the eliminating trial for the selection of an American team for the Vanderbilt cup race October 14, which was run yesterday over four 28.3-mile circuits of Nassau county, Long Island road, aggregating 113.2 miles. Five cars qualified both so far as the leaders and the runners up went, in times that vindicate the pretensions of the United States to entering the international road racing game, and emphasize the oft-proven claims of the ability of American makers to build touring cars that will go as far and as fast as the product of their European rivals, and give a fairly good sporting chance of America's evolving a winner of the Vanderbilt cup and making a creditable average showing as well.

Bert Dingley, a curly-headed westerner, piloting a 50-horsepower four-cylinder Pope-Toledo, built on continental lines, finished first in 2 hours 50 seconds, an average of 64 seconds to the mile and 56.2 miles to the hour. His fastest lap—his finish—was run in 27 minutes 58 seconds. Dingley drove this car in the 1905 Bennett race, but stopped in the first lap owing to a broken oiler. His previous racing experience was entirely on tracks on the Pacific slope.

Joe Tracy, an Irish-American of mechanical proclivities and inventive accomplishment, brought in a 90-horsepower four-cylinder Locomobile of accepted construction second in 2 hours 1 minute 49 seconds, 59 seconds behind Dingley, an average of 64.5 seconds to the mile and 55.8 miles to the hour. His last lap was his fastest. It was done in 29 minutes 13 seconds. Tracy drove this car in this year's Bennett contest, but failed to make a creditable showing owing to the clutch giving out. Tracy is a veteran driver, as far as American track and track racing goes. He has been credited with records at Empire City track, Yonkers, in a Renault, has driven a car at the last two Ormond meets, and finished second to Carriaburu for the Havana cup over the highways of Cuba last February.

Robert Jardine, superintendent and designer



THE THOMAS ON WILLET'S ROAD

of the Royal Motor Car Co., driving a 41-horsepower four-cylinder Royal, of 1906 touring car type, was third in 2 hours 19 minutes 18 seconds, an average of 73.3 seconds to the mile and 49.1 miles to the hour. His fastest lap—the second—was covered in 33 minutes 21 seconds. This was Jardine's first road race. He was 5 years with the Panhard company in France, where he got his experience.

Frank Nutt, a member of the factory staff of the Haynes Automobile Co., who piloted a 50-horsepower four-cylinder Haynes, of 1906 touring car type, finished fourth in 2 hours 23 minutes 32 seconds, an average of 76 seconds to the mile and 48.6 miles to the hour. His fastest lap—his last—was done in 33 minutes 34 seconds. This was Nutt's first road race. He has piloted Haynes cars in many endurance tests held the last few seasons.

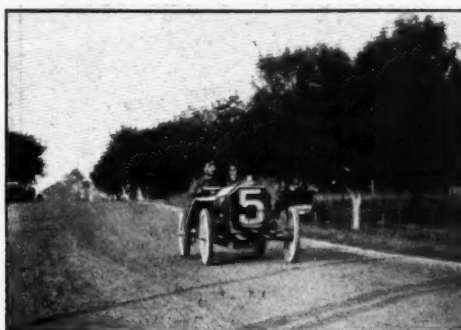
Montague Roberts, a demonstrator for Harry Houp, who drove Houp's 60-horsepower six-cylinder Thomas racing car, was fifth in 2 hours 29 minutes 40 seconds, an average of 79.3 seconds to the mile and 45.5 miles to the hour. The previous racing experience of Roberts has been confined to the track.

Of the five cars which failed to qualify the Christie covered two complete laps; the six-cylinder Pope-Toledo, the Franklin and the White one each; while the Matheson retired on the first round.

The tire record was a triumph for American makers. There was not a single stop for tire repair or replacement during the whole race, the Christie tires having been ripped off and torn in a collision with the curb. Leaving the Christie tires out of the question, eight cars fitted with forty tires ran 640.9 miles at racing speed without replacement or a single puncture to any one of the forty. There were no fatalities or injuries among either contestants or spectators.

RACE FROM THE GRAND STAND

Mineola, L. I., Sept. 23—Five o'clock in the morning was the time named for the starting of the race. Enthusiasts began to arrive at the initial point long before that hour, when there was nothing to do but to chew the morning mists and commune with the cold stars. First on the scene was A. R. Pardington. At 4:15 o'clock he and Frank Webb crawled out of a delivery van of the Abraham & Strauss Brooklyn department store, at the back of the grand stand. The van was their auxiliary to two tents that formed the camp of the Long Island Automobile Club. This foxy pair had quit the



THE LOCOMOBILE ON JERICHO ROAD

saturnalia in the tents in order to get a pinch of sleep in the horseless wagon that was also motorless. With a grinning glance at the dirty shoes protruding from under the tent, Pardington silently led the way to the road-way between the two spectral stands of unpainted pine that loomed yellowly beneath the crescent of the waning moon. They had the advantage of being first on hand. James L. Breese and S. M. Butler soon came bowling up in the car of the former. Then other officials began to arrive.

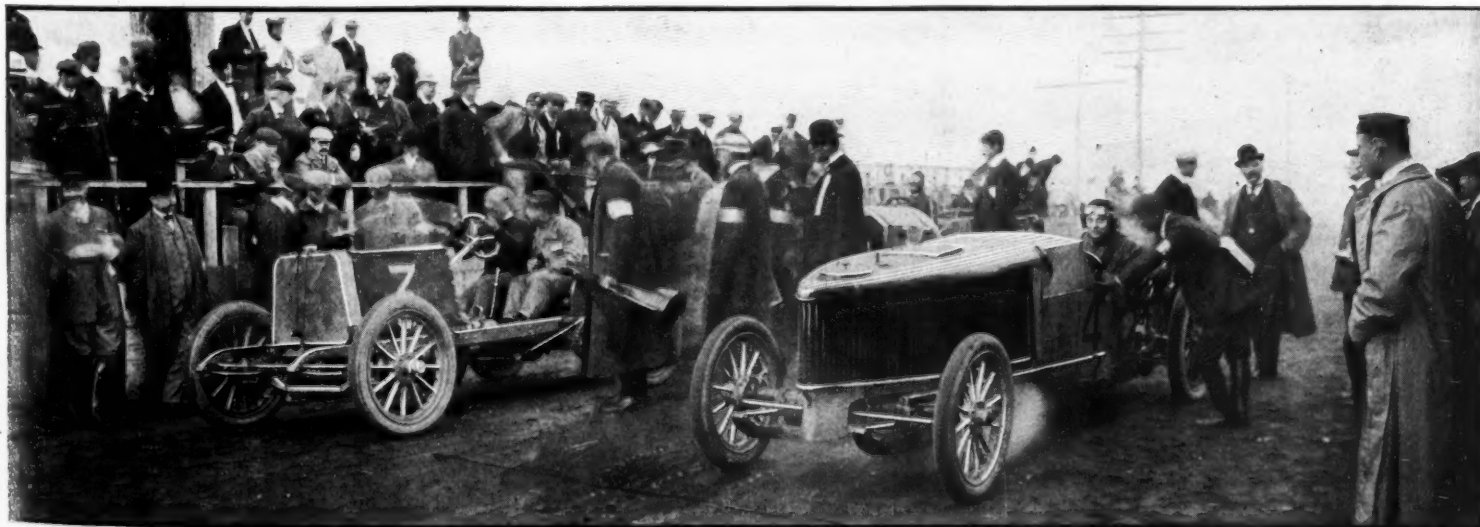
There was light enough to start the race at 5:15 o'clock. It was decided by the officials to wait till 5:30 o'clock, however. Meanwhile there was great commotion and some confusion on the course. Automobiles and hacks, spectators afoot and programme vendors, mingled with the officials on the course that was to have been closed at 4 a. m. and kept clear thereafter. The officials seemed to have the arrangements well in hand, however, and, ignoring the crowded course, busied themselves with preparations. At 5:25 o'clock Peter Prunty, the announcer, lifted his megaphone and began to earn his money. He gave notice that the race would begin in 5 minutes. With a little activity on the part of the officials the crowd on the road near the tape was then considerably thinned. The sharpshooters with cameras were allowed to remain in order to photograph the start. A dozen or more cameras were aimed at Frank Nutt and Bert Dingley, in cars numbered 1 and 2, when they showed up to the tape. After stopping at the tape Dingley backed his car away and returned in a position more to one side, in order to let the officials stand between the cars. Thirty seconds before 5:30, Starter F. J. Wagner began to warn the driver of No. 1 of the impending moment. He began to count off the seconds in bunches of five—

"thirty, twenty-five, twenty, fifteen, ten," he called, and then, a little louder and with an added note of warning in the tone, he began to toll off the seconds singly, waving his arm with each count in the manner of a referee counting out a groggy pugilist. "Ten, nine, eight," and so on down to "two," it went. The last second of the ten was omitted and in its place was shouted the fateful "go!" And the race had started.

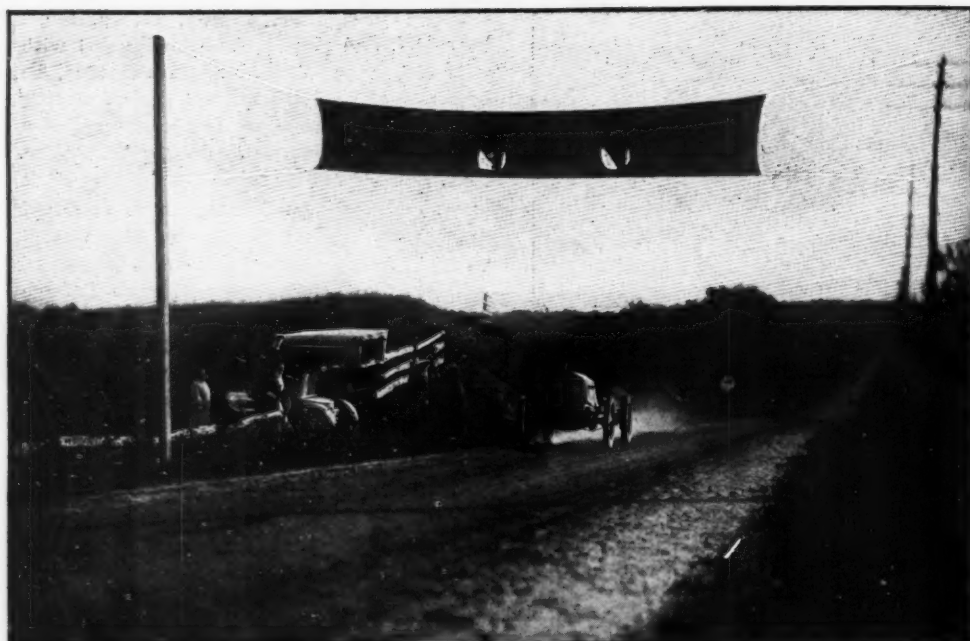
While the counting was going on Referee Vanderbilt was busy trying to keep the course clear. The spectators in the grand stand, the timers and scribes in the one opposite and all those about, were standing, tense with expectation. Nutt sat in the Haynes car obviously uncomfortable. He fidgeted a little and there was no question about his being nervous. The engine of the car was running splendidly, though, and from the exhaust pipe flame and smoke belched with each explosion in a way to delight the small boy. When the word to start was given, Nutt's nervousness became more apparent. He had some difficulty throwing in the clutch and made a slow start. Finally he caught it and then, off, down the grade and away, up the road toward Jericho and the reddening east he whizzed at a fairly good pace.

Two-minute intervals between the starting of the cars was the rule, and for a minute and a half Dingley sat at ease. He showed none of the signs of nervousness. He and his mechanic, Tony Nichols, were clad in the same sort of black leather armor, with helmets, that Lytle and Dingley wore in the race last year, and which made them resemble imps of the evil one. After the counting of the starter, Dingley made a good start at the signal, throwing in his clutch in a fraction of a second and shifting to his high speed within 30 feet of the tape. Mongini, in the L. M. Palmer Matheson, next lined up, with his engine fairly spouting flames. He was the only one of the drivers who was minus every vestige of chauffeur garb. He wore a bicycle cap, and a red sweater, behind the neck folds of which a white linen collar was visible. He, too, was nervous, but made a fair start withal.

Walter White, with the powerful steamer, to which many had pinned faith, moved silently up to the line, some puffs of steam below being the only evidence of a running engine. White felt the strain of anticipation, also. He slipped in his clutch without a fumble when he got the word and twenty feet from the tape threw his lever with intent to



MONGINI IN THE MATHESON AND WALTER WHITE IN NEW WHITE RACER AT THE STARTING LINE



FRANK NUTT ON THE NORTH TURNPIKE

pick up the higher gear. The lever moved over, but nothing happened. There was no noise, but the car plainly was coasting, and by this sign the onlookers knew that some vital part had given way. White let the car coast to the bottom of the grade, where he was joined by Windsor T. White and Carl Page. There was a murmur of regret and sympathy from the crowd and all wondered what had happened, but had to be content to wait awhile before learning and meantime resume watching the progress of the start.

Joe Tracy brought the massive Locomobile to the line in good style and the running of its engine excited admiring comment, so clean and regular was the sound of its action. A bystander, who knew no one, exclaimed: "That's the car! Who is it? What car is that? There's the winner!" Tracy and his mechanic, Poole, had added a novel feature to their toggerly which commanded attention and made them readily recognized throughout the race. On top of the cap of each a handkerchief was fastened with a safety pin. It was surmised that the idea was to have it handy for wiping the eyes and goggles. Tracy's hand shook some when he raised it to his head, but at the signal he picked up his gears and sent his car away quicker and more smoothly than any other in the race.

Walter Christie's creation, with a direct drive on the front wheels and only one set of speed gears, had to be run up by hand to the tape. Robertson was no exception to the general rule of nervousness on the part of the drivers, but he got away in fair style on his high speed.

Jardine, in the Royal Tourist, the only driver in the race with a face adorned by whiskers, made a splendid impression as he waited for the word. As a man of mentality and the creator of the engine he was to drive, he suggested a locomotive engineer accustomed to his work. Like Dingley, Jardine was calm and self-possessed, and these were the only two of the ten starters who did not betray nervousness. Jardine got away in good style and promptly.

Mortimer Roberts, in the Thomas racer, was markedly nervous while he waited for the word. He made a good start, though, as if relieved by being able to get in action.

Winchester, in the Franklin racer of E. H. R. Green, with its eight air-cooled cylinders standing hoodless and naked in single file, evidenced his lack of ease by driving up to the tape whistling. It was not a good tune, but composed of short, gasping notes, such as those a boy emits going through a dark hallway. Winchester was slow in getting away, but once given the word he picked up speed quickly and whizzed away.

Lytle, in the Pope-Toledo Gordon Bennett racer, while waiting at the tape, gave that infallible sign of nervousness, familiar to trainers of athletes—a yawn. When the time

came for him to get busy with his clutch he fumbled miserably. For a couple of seconds he was pulling and jamming, while the onlookers sighed aloud, for Lytle and his car were the favorites. When he did get away eventually, the speed of the car caused a grunt of satisfaction and then the crowd sat down, for the last car had been dispatched and the race was on.

With Lytle under way, ten cars had been started, the first at 5:30 o'clock and the last at 5:48. The other two of the twelve entrants were the 60-horsepower Premier of G. A. Weidley and the 40-horsepower Matheson of C. W. Matheson. They were scratched.

Hardly was the last man lost to sight before Peter Prunty, the announcer, began to launch through his megaphone the information that was being continually received through the twelve different telephones that brought that many parts of the course to a focus at the grand stand. From the announcements one could follow the progress of the race around the course and by the aid of memoranda tell at all times where each car was in respect to position and elapsed time.

"Car No. 2 passed Bull's Head at 5:46:40 and No. 1 is not yet there," was the first announcement.

Others followed every few minutes and these are samples of them: "No. 6 has burst a tire at Jericho. No. 1 has passed Willets avenue. No. 2 has passed Hyde Park, 3 miles away. No. 5 is at the Guinea road."

At 5:57:58 o'clock came the first real thrill of the race. From far down the road to the west came a message, old and familiar to patrons of road racing. It was passed along the line of spectators who thronged the spaces intervening between the tangle of cars, stand-

THE COMPLETE STORY OF THE VANDERBILT CUP

No.	Car and Motor Power	H. P.	Entrant and Club	Driver	Mechanic	Cylinders	Bore	Stroke	Cooled	Drive	Tires	Started	Finished First Round	Elapsed Time First Round
1	Haynes..... Gasoline	50	Elwood Haynes Chicago A. Club	Frank Nutt	W. J. Clark	4	5	6	Water	Shaft	Diamond	A. M. 5.30	H. M. S. 6.05.38	H. M. S. 35.38
2	Pope-Toledo... Gasoline	60	A. L. Pope Hartford A. Club	Bert F. Dingley	Tony Nichols	4	6	6	Water	Side Chain	Diamond	5.32	5.59.58	27.58
3	Matheson..... Gasoline	40	L. M. Palmer, Jr. Long Island A. Club	Ralph Mongini	John Green	4	5	6	Water	Side Chain	Diamond	5.34	Out	
4	White..... Steam	40	R. H. White Cleveland A. Club	Walter C. White	John Hantak	2				Shaft-Direct	Diamond	5.36	6.43.52	1.37.52
5	Locomobile... Gasoline	90	Dr. H. E. Thomas Automobile Club of America	Joseph Tracy	A. J. Poole	4	7	7	Water	Side Chain	Diamond	5.38	6.09.27	31.27
6	Christie..... Gasoline	60	James L. Breese Automobile Club of America	George Robertson	Nicholas Lechtleitner	4			Water	Shaft-Direct on Front Axle	Special Goodrich	5.40	7.30.37	1.50.37
7	Royal Tourist. Gasoline	40	E. D. Shurman Cleveland A. Club	Robert Jardine	R. H. Tucker	4	5	5½	Water	Shaf	Diamond	5.42	6.16.44	34.44
8	Thomas..... Gasoline	63	H. S. Houpt Buffalo A. Club	Mortimer Roberts	Fred Grant	6	5½	5½	Water	Side Chain	Goodrich	5.44	6.14.53	30.53
9	Franklin..... Gasoline	60	E. H. R. Green Dallas A. Club	W. F. Winchester	Mathew Raus	8			Air	Side Chain	Diamond	5.46	6.22.46	36.46
12	Pope-Toledo... Gasoline	90	Col. A. A. Pope Automobile Club of America	Herbert H. Lytle	T. T. Tattersoll	6	6	6	Water	Side Chain	Diamond	5.48	6.15.44	28.44

ing at various angles, as they had been backed in the gloaming. Before the fact was evident to the vision, the news of it reached the stand and the hubbub subsided somewhat as Peter Prunty raised his megaphone to shout it warningly to the crowd toward the east.

"Car coming!"

A momentary hush, then Krak-krak-krak-krak-r-r-r-z-z-z-z-zup!

And Dingley, in the four-cylinder Pope-Toledo, had whizzed by, completing the first circuit of the course with his engine running finely. There was a cheer from the crowd, then a pause while the announcer learned the time from the officials. A loud cheer followed the announcement that Dingley had made the first trip around the course in 25 minutes 58 seconds. This time was incorrect, the true figures being 27 minutes 58 seconds, but this was not discovered and corrected until after the race was over. Enthusiasm bubbled from this time onward. The announcements became more frequent and the interest in them keener.

"No. 5 has passed Bull's Head."

"No. 6 has passed Bull's Head."

"No. 1 has passed Lakeville."

"No. 12 has reached the Guinea road."

Finally all the cars had been reported, excepting No. 3, the Matheson. What had become of it? Not a word could be learned. The White was reported to have broken a universal joint and to be repairing not far from the tape. The Christie was known to have burst its front tires and broken a rim and permission had been granted by Referee Vanderbilt for it to ship a new wheel. It was at Jericho.

At 6:05:38 o'clock there was another call of "Car coming," a series of gatling gun-like



CROWD WATCHING THE CONTESTANTS AT RAILROAD CROSSING

reports, followed by a whir, a buzz and a snap, and Nutt, in the Haynes, had passed the stands. More details of the progress of the cars followed and next Tracy came crackling past. More details, then the Thomas crossed the line, dropping pieces of hard rubber from its battery or commutator as it ran.

A new thrill came with the announcement:

"Car coming!—Two cars coming!!"

Everyone stood up to see the brush. They were the big Pope-Toledo, driven by Dingley and the Royal Tourist, with Jardine at its wheel. They whisked by two lengths apart. Officially, the Royal was $\frac{1}{2}$ of a second behind

the Pope. News of the restarting of the White and Christie cars was duly told and the positions of the leaders in the second round were being announced while the slower cars were completing the first circuit.

So it went until the last round, and Dingley and Tracy were known to be approaching in that order to a close finish. On the third lap Tracy had 4 seconds the advantage of Dingley and it was an even gamble which would win first place. At 7:32:50 o'clock Dingley finished the race amid considerable excitement. Immediately thereafter Tracy was reported at Lakeville and the watchers began to calculate on the distance and what time he had to cover it, allowing for his having started 6 minutes later than Dingley. It was less of a gamble when Tracy reached Hyde Park. He had 3 miles to cover and less than 2 minutes to do it in. He was rushing over the smooth, straight stretch at about 70 miles an hour, but he could not make it, even at that pace. He finished at 7:39:49 o'clock and it became plain that he thought he had beaten Dingley, when someone told him that he was second by 59 seconds.

All of the cars crossed the tape at speed, excepting the Haynes and the Thomas. They trailed across, although the Haynes made its best time on the last lap. Roberts, in the Thomas, thought he had not qualified, until told that he had.

After the Thomas had finished at 8:13:40 o'clock the race was declared off and the five cars were ordered to report at Albertson to be weighed again.

WHERE THE CONTROLS WERE

There was much of satisfaction among the representatives of the Diamond Rubber Co. over the record made by Diamond tires in the trial. Not a single car which carried Diamond tires was hindered by tire trouble during the race and all the large force provided by the tire-makers had to do was to look pleasant and congratulate themselves. The Diamond people had tire stations at Jericho, East Norwich, the Bull's Head turn, Lakeville and Hyde Park.

The Goodrich controls were at the same points except that they had no men at Hyde park. The Diamond company had from three to five men at each control and the Goodrich

AMERICAN ELIMINATING RACE SEEN AT A GLANCE

Position	Finished Second Round	Elapsed Time Second Round	Total Elapsed Time	Position	Finished Third Round	Elapsed Time Third Round	Total Elapsed Time	Position	Finished Last Round	Elapsed Time Last Round	Total Elapsed Time	Position at Finish	REMARKS			
													Average			
6	H. M. S. 6.44.23	H. M. S. 38.45	H. M. S. 1.14.23	5	H. M. S. 7.19.58	H. M. S. 35.35	H. M. S. 1.49.58	5	H. M. S. 7.53.32	H. M. S. 33.34	H. M. S. 2.23.32	4	Nutt drove careful, consistent race. His fastest round was his last. Car in good shape at finish. No tire trouble. Av. 47.32 per hour.			
1	6.31.05	31.07	59.05	1	7.04.40	33.35	1.32.40	2	7.32.50	28.10	2.00.50	1	Dingley drove hard. Made best round at start. Car in good shape at finish. No tire trouble. Av. 56 per hour.			
Oiling device failed to work on first round after leaving Jericho. Cylinders choked and car was towed off the course.													Mongini did not know the course. Had to watch road closely; hence neglected his oiling. No tire trouble.			
8	Out	Universal joint and brake band broken at start. New universal placed in car but broken brake band put car out near Lakeville on second round.										White apparently was nervous and neglected to loosen his brakes at the start. Repair to universal was made in 25 minutes. No tire trouble.				
4	6.40.40	31.13	1.02.40	2	7.10.36	29.56	1.32.36	1	7.39.49	29.13	2.01.49	2	Tracy drove hard but with good judgment. Car in fair condition at finish. No tire trouble. Av. 55.76 per hour.			
9	8.03.15	32.38	2.23.15	6	Out	Broke both front wheels and tore both front tires at Jericho on first round. Replaced wheels but had another puncture—right front—at Jericho on third round. Car ordered off track at 8.15 a. m.										Robertson had 4 minutes delay, in addition, near Lakeville, with ignition trouble, during first round. To replace wheels he rode a bicycle 4 miles and returned in touring car with wheels. Car fast on straights. Poor tire repairs.
5	6.50.05	33.21	1.08.05	4	7.25.41	35.36	1.43.41	3	8.01.13	35.37	2.19.18	3	Jardine showed much judgment. He drove sanely and carefully, humoring his car. He overturned at the Willett's corner, but lifted his car back. He lost but 5 minutes by this, in the third round. No tire trouble. Av. 48.76 per hour.			
3	6.51.15	36.22	1.07.05	3	7.28.05	36.50	1.44.05	4	8.13.40	45.35	2.29.40	5	Roberts took many chances on turns, and drove desperately on the straights. He had some carburetor trouble. Car in poor shape at finish. No tire trouble. Av. 45.42 per hour.			
7	Out	Pin loosened on crank shaft at Greenville. Loose pin penetrated gasoline tank.										Winchester's car did not run well, but he got good speed out of it during the time it was running. No tire trouble.				
2	Out	Slowed down to take oil at East Norwich. Then tried to start on high speed and stripped gears.										Lytle drove with his usual skill and dash. Car ran well until transmission went to pieces. No tire trouble.				



SCENE IMMEDIATELY AFTER THE FINISH OF THE TRIAL RACE

stations were in charge of two men each.

The Pope company had repair controls at East Norwich, Jericho, Lakeville and Hyde Park. They also had two cars running back and forth across the roads which connected the two long stretches of the course. In all the Pope company had upwards of twenty men ready for emergency service. Only those at Lakeville and East Norwich were in demand for any serious labor.

The Haynes car had controls at Krug's hotel and at Jericho and a mechanic with tools at Lakeville. The White repair stations were at Jericho, East Norwich and Lakeville and their headquarters at Bull's Head. The Locomobile had a station at Greenville, and repairers in waiting at Lakeville and Jericho. The Christie car had only one repair station, at the headquarters on the Jericho turnpike near Mineola. The Royal had headquarters at Krug's hotel and a repair station at Jericho. The Thomas car had three repair stations, one at Hyde Park, one at Lakeville and one at East Norwich. The Franklin also had a repair station near East Norwich and a force of mechanics near the grand stand.

AT THE CORNERS AND TURNS

Fewer than a thousand people gathered at the Jericho turn to see the cars make the swing to the north. There were fifteen or twenty touring cars there. The cars took the curve carefully the first time around, with the exception of Robertson, this in spite of the fact that the Jericho curve and that at Hyde Park were the easiest to make of all the turns. Robertson attempted the curve at high speed and ran into the ditch on the outside. His wheels struck a large stone which lay by the side of the roadside and several spokes were broken in the right front wheel. The left front wheel was also badly wrecked and both front tires were torn off. Robertson reached a telephone in a tire control in quick order and telephoned first to the referee for permission to put on two new wheels. Receiving this, he begged a bicycle from a spectator and, jumping upon it, rode back up along the course to the farm-house known as Beekman's, where the Christie headquarters were established. There was something dra-

matic about this bare-headed rider plunging along for 5 miles, deaf to the shouts of flagmen and spectators and keeping his eyes on the road ahead to avoid racers. Arriving at Beekman's, Robertson took two new wheels, with new tires attached, and threw them into the tender-car with the bicycle. Then he drove back down the Jericho road at the top of the speed his touring car commanded and set to work to place the wheels on the big racer. So fast did he work that he had the wheels in place, the car running and had completed the first round in 1 hour, 50 minutes and 37 seconds.

On later rounds, all the contestants took chances with their cars at this point. But none was in danger at any time.

It was expected that there would be sensational doings at East Norwich, but the crowd at that point were disappointed. The drivers seemed to recognize that it was a danger point and all of them slowed down to 20 miles an hour or slower as they swept around the right angle by the hotel. The crowd at East Norwich was composed mainly of persons indigenous to the soil.

The only happening of moment was the break-down of the Lytle Pope-Toledo, which occurred just west of the corner near the Pope control. Lytle had slowed down for oil and the can had been passed to Tattersoll by a mechanic. The driver attempted to throw in his high speed gear. He pushed the lever hard, there was a rasp and a scrape and a roar and the car stopped.

"Stripped," yelled Lytle as he jumped

from the seat. Then he said things which would melt the type if an attempt were made to print them. By the time the news of this mishap reached the grandstand, it had assumed the complexion of a "broken sub-frame." But it was a stripped gear and nothing else. Most of the drivers took the sandy grade down and out of East Norwich at break-neck speed and reckless daring.

The Guinea woods was the spot where the most exciting incident of the race took place. The turn is a bad one for several reasons. First, it is hard to discover. The driver comes out of dense woods upon the transverse road and has no time to prepare for the turn unless he watches the sign stretched by the committee; second, the road is sandy; third, the turn is sharp; fourth, it is to the right, the only one on the course so situated. Jardine tried it a little too fast. The car skidded to the outside of the turn and the wheels were stopped by a quantity of rock which had been thrown in at this point to give traction. Now traction is a good thing when you are going forward or back, but a bad thing when you are moving sidewise. So Jardine found. He shut off his power quick and prayed softly to himself as the car toppled over onto its left side and lay, a sprawling monster, in the ditch. Tucker, the mechanic, jumped before this happened. Jardine stayed. He had to. Neither was injured.

The driver of the Royal sprang to the ground and exercised his first care in seeing that the machine was out of the way of cars coming after. Then he grasped the side of the car and ordered Tucker to take hold, too, and help him make repairs.

"Turn her over, Tucker," commanded the driver.

The mechanic gave the crank a quarter turn and the engine responded. Jardine was as cool as a cucumber.

"See any leak?" he asked.

"No," responded Tucker, "but we've smashed the neck of the water-tank."

"To Jericho with the neck of the water-tank," quoth Jardine.

Then Tucker crawled under the car and looked at it from the abdominal point of view. Then he reported that it was all right.

"All right, is it," said Jardine quietly. "Then get in." Tucker jumped aboard and the Royal jumped out on the highway.

WHAT THE DRIVERS SAID

Dingley was waiting calmly for his car to be weighed out when he was asked about the race. He said: "Why, there isn't much to say. I drove the Pope-Toledo as well as I knew how and as it is a stanch car and a true one, it stood by me. I knew all the time it had the speed, but feared trou-

TEAMS FOR VANDERBILT CUP RACE

AMERICAN TEAM			
Owner	Car	H.P.	Driver
A. L. Pope	Pope-Toledo	60	Dingley
Dr. H. E. Thomas	Locomobile	120	Tracy
J. L. Breese	Christie	60	Christie
R. H. White	White	40	W. C. White
A. A. Pope	Pope-Toledo	90	H. H. Lytle

FRENCH TEAM			
Owner	Car	H.P.	Driver
De Dietrich Co.	De Dietrich	120	Duray
Renault Freres	Renault	100	Sisz
Darracq Co.	Darracq	80	Wagner
Panhard-Levassor Co.	Panhard	120	Heath
Darracq Co.	Darracq	80	Hemery

GERMAN TEAM			
Owner	Car	H.P.	Driver
Baron de Caters	Mercedes	120	Owner
John B. Werden	Mercedes	120	Owner
Foxhall Keene	Mercedes	120	Owner
Robert Graves	Mercedes	120	Jenatzy
C. G. Dinsmore	Mercedes	120	Werner

ITALIAN TEAM			
Owner	Car	H.P.	Driver
Hollander & Tangeman	Fiat	110	Lancia
Hollander & Tangeman	Fiat	110	Nazzari
Hollander & Tangeman	Fiat	110	Cedreno
Hollander & Tangeman	Fiat	110	Chevrolet
A. G. Vanderbilt	Fiat	90	Sartori

THE AMERICAN ELIMINATING TRIAL BY ROUNDS

FIRST CIRCUIT—28.3 MILES			SECOND CIRCUIT—56.6 MILES			THIRD CIRCUIT—84.9 MILES			FOURTH CIRCUIT—113.2 MILES		
Pos'n	Driver	Time		Time	Time		Time	Time		Time	Time
				This	Two		This	Three		This	Four
				Circuit	Circuits		Circuit	Circuits		Circuit	Circuits
1.	Dingley	0:27:58		0:31:07	0:59:05	1.	Tracy	29:56 1:32:36		1. Dingley	28:10 2:00:50
2.	Lytle	0:28:44		0:31:13	1:02:40	2.	Dingley	33:35 1:32:40		2. Tracy	29:13 2:01:49
3.	Roberts	0:30:53		0:36:22	1:07:15	3.	Jardine	35:36 1:43:41		3. Jardine	35:37 2:19:18
4.	Tracy	0:31:27		0:33:21	1:08:05	4.	Roberts	40:50 1:44:05		4. Nutt	33:34 2:23:32
5.	Jardine	0:34:44		0:38:45	1:14:23	5.	Nutt	35:35 1:49:58		5. Roberts	41:35 2:29:40
6.	Nutt	0:35:38									
7.	Winchester	0:36:46									
8.	White	1:07:52									
9.	Robertson	1:50:37									

ble with my oiling, as was the case abroad. I did not know I had won until I had been off the course for some time. I was too early a starter to take any chances of getting behind. I passed only one car in motion. That was near the stand. I don't know what it was. Oh, the Royal, was it? Well, you know we don't have time to look for identification marks when we are running. I hope to make a showing with the Pope-Toledo in the Vanderbilt, but it will be a hard race. I shall go on training for it and studying the roads some more. I feel as if I knew what to study now. I am sorry for Lytle. He is a good driver and ought to have had better luck in this eliminating trial."

Joe Tracy came out of the race very warm and very nervous. It had been a hard race for him. He thought he was ahead until he learned the actual official time. Later, when he was somewhat rested and at ease, he said: "It was a good race, thoroughly fair in every particular. The course was in good shape in the main, but there were two places where it was rough and where I had trouble with the machine. One was on the Willett's road, where there seemed to be a lack of bottom to the roadbed. The other was on the Jericho turnpike, and was due chiefly to rough stone. At these points I had to slow down to about 40 miles an hour. I did not get all the speed out of the Locomobile that it was capable of. I did not try to do so. What I wanted to do was to qualify and I did not particularly care whether I won this race or not. The coming struggle is the one I am after. I want to say that I believe Dingley to be one of the best drivers in the world. He drove a wonderful race, when the power of his car is considered, and should be heard from in the later event. I was able to go at nearly 75 miles an hour on portions of the Hempstead turnpike, and all things considered I think that is where the speed will be made on October 14. One can make up there a great deal of what is lost on the turns. But no very great speed will be possible if it is as foggy as it was this morning. In the hollows I could not see 50 feet away from me at times. Of course the sun soon took care of that. But I hope it will be clearer when the main event is run."

Robert Jardine, although not an experienced driver, was undoubtedly the coolest man who sat in a racing seat on Saturday. He showed no nervousness at the start and was equally calm after completing his plucky run. He knew his car well and did not attempt to force more speed out of it than was in it. Jardine is a modest man and had little to say after the race about the magnificent showing he had made. He laughed over the upsetting and said he did not feel much alarmed, even when the car was tip-

ping over on the turn near the Guinea woods.

Frank Nutt, who drove the Haynes car, said, after the race, that he was satisfied with the result. He added that the car had done as well as he expected. He said he found the course in generally good condition and thought the trials were well conducted. Nutt is a self-contained man and he refused to show any elation at the finish of the Haynes car among the qualified machines. He has been with the Haynes company for years and drove a competing car in the New York-Pittsburg endurance run in 1903. Those who saw his work at that time were not surprised at the nerve and pluck which he displayed on Saturday.

L. M. Palmer, Jr., who entered the Matheson car which Mongini drove, was seen at the Matheson headquarters after the race. Mr. Palmer felt much chagrined at the poor showing made by the Matheson cars, but said that the builders had had much hard luck in the making of the cars. "There seems to be something wrong with the oiling system," he said, "and we have not had time to discover what it is. Cooper's car ran dry Friday and it being dark he did not know what was happening. Today practically the same thing happened. It seems too bad, for I am sure our cars had speed and reliability and I should have liked to have shown what they could do. Something of Mongini's failure today was due to the unhappy fact that he did not know the road. He had, therefore, to give practically all his attention to the road and hence was not able to look after the motor as he should.

Walter White had very little to say about the steamer which broke down. He was of the opinion that if his water tank had held together, he would have made a fair showing, even after the accident at the start. He added: "When I started in this race I felt confident that my car would be among the contestants in the Vanderbilt race. Before we had gone 2 miles I felt that the connecting rods were loose and that the car was in a generally unsatisfactory condition. I ascribe the trouble which put me out of business to the laxity of the mechanic or mechanics who were supposed to deliver the car to me in perfect condition. Further than that I do not care to talk. It is not an inspiring subject of conversation."

George Robertson, who made such a game fight to keep in the running with the Christie car, said that his defeat was due to slow repairs on the part of the tire men stationed at Jericho. He said he was able to get great speed out of the front-driven racer during the time it was running on inflated tires, but that he wasn't able to offset the shortcomings of others. Robertson said also that the Christie car was hard to control on curves from the fact that the weight was all in front and that when he struck a bump in the road the front part of the car would go up in the air and the wheels spin about in the atmosphere. "I never drove an airship," said Robertson, "and cannot qualify on that basis."

Roberts, Winchester and Lytle did not feel that there was anything to be said about their experience in the race.



EARLY MORNING CROWD NEAR THE STARTING POINT ON JERICHO TURNPIKE

FLORIO RACE GREATEST OF THE SEASON



RAGGIO, FLORIO CUP WINNER

Brescia, Northern Italy, Sept. 10—All three trophies contested for in connection with the Florio race were won by the Itala car. Raggio carried off the principal one—the Florio cup—while Ceirano took the Italy cup for the fastest time for one circuit, doing the 300 kilometers in 2 hours 40 minutes, an average of 69.9 miles an hour. The Count de Salemi cup for team performance also went to the Itala firm, Fabry, the third man, receiving favorable comment, although he did not win a prize. Raggio's victory came as a great surprise to everyone, for he started sixteenth and had been overlooked. While all eyes were on Hemery and Lancia, this Raggio was whirling around the course at a speed of 65.19 miles an hour and, being favored by luck, not having a single puncture the entire journey, he sneaked home an easy winner.

About 11:30 Hemery finished the race first. He was the first to start and the first to arrive, his uncorrected time being 5 hours 4 minutes 12 seconds. Lancia rushed by 7 minutes later. Rougier and Duray, both De Dietrich, were the next arrivals and their appearance convinced the French section that the second Florio cup would pass over the Alps. As a consequence the Marseillaise was not spared. The spectators, however, were poor guessers. Owing to the failure of the telegraphic and telephone service no news had come in from outside parts of the circuit

and the winner had been calculated upon without taking into account the spacing control allowances. It was impossible to obtain these until late in the afternoon, and when they did come through and Tampier had posted up his little sheet with the official times, there was a surprise for everybody and a bitter awakening for the Frenchmen. Low down in the list, all of them late starters, were the three Itala cars which, although having run at remarkably fast speeds, were overlooked by everybody. It was Raggio, starting sixteenth, who had secured first place and carried off the coveted cup from the crack Frenchman.

The winner's average speed was 65.19 miles an hour. Itala's victory, however, did not end here, for although not appearing on the final classification, Ceirano had driven the Itala in the fastest time over the first 300 kilometers of the circuit, which he had covered in 2 hours 40 minutes, or an average speed of 69.9 miles an hour. Had he not been forced to run on the rim, with the result that he broke a wheel and had to withdraw on the third round, Ceirano might have been the winner, or at any rate a very close competitor for the Florio cup. There was yet another and final victory for the Itala firm, for it secured the Count de Salemi cup.

The finish was as follows:

1. Raggio, Itala.....4:46:47 2-5
2. Duray, De Dietrich.....4:56:20 4-5
3. Lancia, Fiat.....4:57:04 1-5
4. Hemery, Darracq.....4:58:12
5. Rougier, De Dietrich.....5:12:50 2-5
6. Nazarri, Fiat.....5:12:52
7. Fabry, Itala.....5:18:10 1-5
8. Wagner, Darracq.....5:19:02 4-5
9. Florio, Mercedes.....5:29:11 4-5
10. Gabriel, De Dietrich.....5:33:44 4-5
11. Terry, Mercedes.....6:21:45

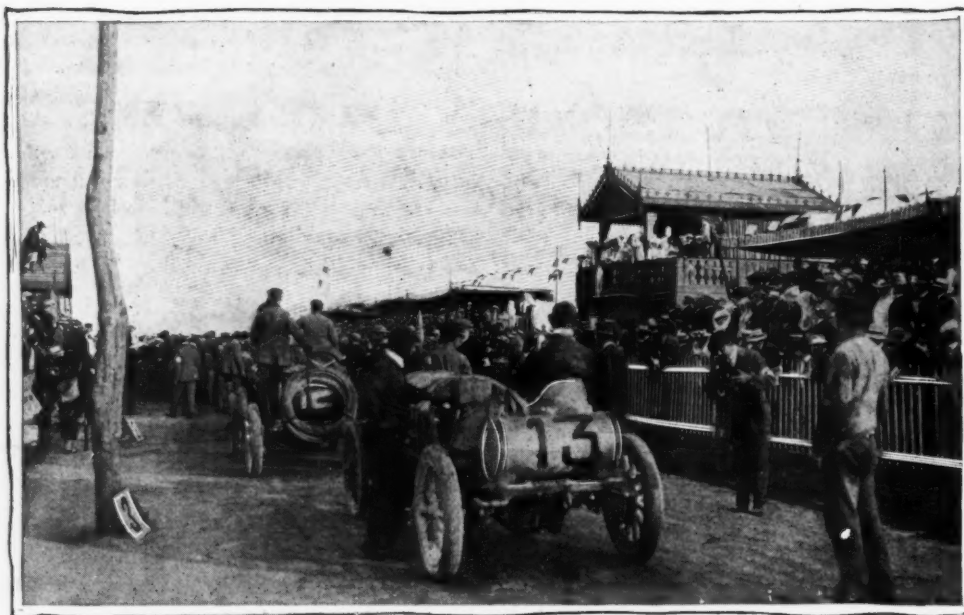
The first ten cars were all fitted with Michelin tires, which, despite the high speeds and the very hot weather, made a good show. There were no accidents of a serious nature. The Mercedes car, driven by Garteau, broke its differential; Marieaux, also with a Mercedes, overturned while taking a sharp turn near the bridge at Rabioso, but no injury was done to either driver or mechanic. Seventeen cars finished the first round, fifteen the second and eleven the entire course. The



CHEVALIER FLORIO, DONOR OF CUP

winning cars, which are constructed at Turin, have pressed steel frames, four cylinder vertical motor, 46-7-inch bore and 41-7-inch stroke, four speeds with sliding gear and shaft drive, disc clutch, honeycomb radiator and Simms-Bosch magneto, and are fitted with Michelin tires.

The Florio cup is not the only event in connection with the Brescia circuit. There have been motorcycle races, touring car events and motor boat competitions on the northern Italian lakes, but all these have faded into insignificance before the great event of today. There were really three events in one: The Florio cup, a trophy offered by the Chevalier Florio, to be held by the winner for 1 year, a miniature of the cup being retained permanently by him, and the seventh year the large cup passing into the hands of the firm having won it the most times. Money prizes of \$8,000 to the builder of the winning car, \$1,000 to the chauffeur, \$600 to the second, \$400 to the third and \$200 to the fourth are additional attractions. The Count de Salemi cup is given for the best team performance, and the Italy cup for the fastest time on the first 300 kilometers of the circuit. It is almost an ideal course; a triangular circuit with its apex near Brescia, giving a distance of 103.8 miles, or 311.4 for the three rounds required for the Florio cup; long straight lines which leave the chauffeur free to push his motor forward to the very utmost of its speed; a well-prepared surface, with, however, the natural disadvantage of being rather too dusty, and admirable police and control arrangements. There are no neutralizations, strictly speaking; but at the four grade crossings on the circuit spacing controls had been arranged. If there was a 4 minutes' interval between an arriving and a preceding car it was stopped between the two white lines painted on the ground, given a control card and sent off immediately without any account being taken of its time. If less than 4 minutes intervened, the car was stopped a full number of minutes to give the required interval, the arrival and departure marked on the control card and then restarted. It was, in fact, the system adopted in the Bennett race. An Italian timer had charge of the timing arrangements at each of the grade crossing controls, but at the starting point it was the official timer of the Automobile Club of France, M. Tampier, who had charge of this delicate operation of clocking. There were twenty-one starters, being but



CROWD AT THE START OF THE FLORIO CUP RACE

THREE-WHEELERS IN CLOSE CONTEST



FOULON ON A BRUNEAU

one short of the total number entered. They included three De Dietrichs, Rougier, Duray, Gabriel; two Darracqs, Hemery, Wagner; two Bayard-Clements, Albert Clement, Cartes; five Fiats, Lancia, Nazzari, Cagno, Weillschoff, Gandini; three Italas, Raggio, Ceirano, Fabry; one Isotta Fraschini, Le Blon, and five Mercedes, Florio, Mariaux, Gasteaux, Cortese, Terry. Exactly at 6:30 o'clock Hemery was sent away, followed 4 minutes later by the Italian favorite, Lancia, the others all starting at 4 minutes' intervals. Terry, in a Mercedes, was the last to leave at 7:52. All the starts were made without any incident excepting the Fiat driven by Weillschoff, the motor of which stalled twice, and the Bayard-Clement, driven by Cartes, which could not be started up promptly and got away late. Albert Clement had a continuance of the bad luck which has attended him this year. On the journey from the works his car was delayed by the railway company, detained by the customs officials and only delivered at the last moment in a damaged condition.

Hemery was the first to come round to the starting point again, his time being 1 hour 29 minutes 54 seconds, or an average speed of 69.2 miles an hour. He was followed by Rougier; Lancia, who had been delayed and lost one position by reason of two punctures; Ceirano, Florio, Wagner, Duray, Fabry and Nazzari. Without taking account of controls, which have not been published, but which one may assume on this first round to be nil, Hemery had the fastest time. Le Blon, Cagno, Garteaux and Cortese failed to finish the first round. On the second round the Frenchmen had become favorites. Rougier, who had started fourth, passing first in 1 hour 34 minutes 57 seconds, without deductions for neutralizations. Gabriel followed him, and Lancia's Fiat and Ceirano's Itala came close after, hotly pursued by the third De Dietrich, driven by Duray. All the betting—for the first time in the history of European automobiling official betting was indulged in—was in favor of the French team, the De Dietrich drivers being great favorites. The finish of the third and final round was as described above.

During the course of the race some excitement was caused at the grand stand by a Parisian journalist endeavoring to cross the circuit and being stopped by the gendarmes. Angry words and finally blows ensued and the pugnacious reporter was taken prisoner to the timers' box, the only dungeon available.

Paris, Sept. 17—Twenty-one tri-cars competed for the Flino cup and demonstrated the practicability of the three-wheelers. The test consisted of a dash along the flat in which the cars were forced to average at least 20 miles an hour or not be counted in the rest of the competition, which wound up with a 1 kilometer hill climb, the cars being timed up hill and then again down hill. Of the twenty-one that started all but three finished, the honors going to the Bozier tri-cars, which captured first and second places, Schweitzer steering one and Giraud the other. Rivierre, on a Mototri-Contal, was third. The others outside the prize list finished in the following order: Chellus, on an Austral; Pillas, Mototri-Contal; Foulon, Bruneau; Vandelet, Stimula-Vandelet; Chevalier, Bozier; Couderil, Lurquin & Coudert; Devaux, Stimula-Vandelet; Bauduret, Werner; Bonnevie, La Francaise; Barrie, Chanon; Chanon, Chanon; Dompier, Dompier, Jr.; Jean, Austral; Suere, Velox-Levraux; X, Le Rappel. Three failed to finish the hard race.

It was on the hill that Schweitzer made his best showing, going up in 2 minutes 23 seconds and down in 1 minute 22½ seconds, a total of 3 minutes 45½ seconds. Giraud did 2 minutes 43 seconds going up and 1 minute 21½ seconds down, a total of 4 minutes 4½ seconds. Rivierre did 4 minutes 6½ seconds for the double trip, ½ second faster than Devaux.

Several of the cars were constructed with an auxiliary frame of tubing to give a lateral rigidity. The test, which was made in the roughest of weather, over bad roads and against high winds, near St. Germain, showed that the three wheelers are durable and capable transporters. The 100 kilometers were covered in less than 5 hours, which time is good when the condition of the roads is taken into consideration. Another important thing brought out was that the race was not to the swift. Some of the lighter machines would have done remarkably well on fine roads, but in the up and down hill kilometer tests the machines which ran with the greatest regularity won the prizes. The winning tri-cars, the Boziers, were equally good in the up and down tests. They are well built and strong and are fitted with 4½-horsepower motors of the classic Aster type. Schweitzer and Giraud, who drove them, succeeded in getting the best work out of them.



GASTON RIVIERRE

It may be added that the two machines were fitted with the Michelin tires. Rivierre, on his Mototri-Contal, got third place and showed remarkable bursts of speed on the trip.

Those machines which failed to get a place were unfortunate rather than unfit. In the first rank of the unfortunate ones is found an Austral piloted by Chellus and which gave the winners a tussle. Then there was the Contal of Pillus. Others which deserve mention are the Stimula-Vandelet, the third Bozier and the Surquin & Coudert, all of which are well constructed machines. The two Werner machines were unfortunate. No. 8 made the descent in 1 minute 19 seconds. Since the machine failed to make the 20 miles an hour in the earlier stages of the trip it could not be officially timed.

Special mention is due the Velox-Leiraux, to the Dompier Jr. and to La Francaise. As for the Le Rappel, which made good time on the down hill kilometer, it had the misfortune to break down and was pushed in at the finish, so its time did not stand. This test is expected to wipe out prejudice that has existed toward the three-wheelers, it being alleged that the tri-cars were in reality only motor cycles with another wheel added. The fact that eighteen of the twenty-two stood the rigorous trials opened the eyes of the doubters and now the three-wheelers are high in favor with those who have been criticising them.



TRI-CARS GATHERING AT THE STARTING POINT



ALL VEHICLES MUST CARRY LIGHTS

EACH and every day brings evidence of the necessity that all vehicles—automobiles, carriages, trucks, delivery wagons and bicycles—should be compelled to carry lights at night, and a fatal accident to an automobilist near Chicago points out this necessity. This need does not apply to Chicago or to any other one city; it applies to the country districts as well, but probably not until there has been a number of bad accidents will this come home to the authorities in its grim reality.

There has set in a new era, there is a new condition existing, and it is essential and only American, that, with advancement and new conditions, there should be steps forward instead of clinging to the habits of several decades past. The advent of the motor car has brought this change in affairs, it has made new conditions so far as travel and the use of the highways are concerned, and with these changes men must also change. It will not do to stick to the old ways when progress demands something more up-to-date and more secure for the welfare of the community.

The motor car is here; it is a comparatively new means of travel; it is a road locomotive—as much a necessity now as the railroad or the trolley car. It has been the target for all sorts of abuse and attack, just as all new things are at some time, and it has been legislated against to the limit. But with all the legislation directed against it the right track has not been entirely struck.

Another year will see the number of automobiles double what it is at this time. The necessity for more modern highway traffic regulations becomes at once apparent. They cannot come a moment too soon if they are to be effective for the season of 1906.

A few years ago the public howled about the noise that automobiles made; today the public complains of the stillness of running that most machines enjoy. There is little chance to avoid accidents when horse-drawn vehicles are permitted to use the highways unless provided with some sort of signal lights. It is true that today the burden for an accident, caused by an automobile to a horse-drawn vehicle, would probably be on the driver of the automobile, simply because of the lack of laws compelling the owners of the horse-drawn vehicles to provide such things as would do nothing more than guarantee their own protection. And yet, it is even doubtful if, in the light of the changed and recognized conditions of traffic on the highways, a sensible court would find for the horse-drawn vehicle owner in a case for

damages against an automobilist where it was shown the horse-drawn vehicle owner had been guilty of negligence in not providing himself with the necessary and essential warning signals.

A few years ago cyclists all over the country demanded that all vehicles should be provided with lights and the cry was so general that at least in many parts the cry was heeded and ordinances were passed compelling the carrying of lights by horse-drawn vehicles. The decay of cycling, however, caused the measures to be abandoned and forgotten. If there was ever a necessity that all vehicles should carry lights during the height of cycling, there are reasons fourfold why they should be compelled to do so now.

The experienced automobilist can readily recall numerous incidents whereby only carefulness and a sharp lookout on a dark road prevented fatal accidents. One automobilist last week, careless or not, did not prevent such an occurrence, and he paid the penalty with his own life. Crashing into a wagon, carrying no lights, took away his life and illustrated the necessity complained of herewith.

EXPULSION, NOT ELIMINATING, RACE

IF THE Vanderbilt cup commission does not go down in automobile history it will not be for lack of doing. In one fell swoop this body has created more discussion than its most ardent admirers could have anticipated. Nor is this discussion by any means unanimously favorable to the commission itself. In one sense the commission has hewed well to the lines of an eliminating affair, for Webster defines "eliminate" as follows:

ELIMINATE—To put out of doors; to expel; to discharge; to release; to set at liberty.

Mr. Morrell and his associates on the cup commission, including Mr. Vanderbilt himself, undoubtedly had a right to undertake to hold an eliminating affair, presumably for the purpose of expelling all but five contestants, these five to represent America in the Vanderbilt cup race. Although the commission reserved the right to select any five cars it desired, regardless of the outcome of the trial, it announced by inference and by precedent that the first five cars to finish would be the cars selected. But precedent was laid on the shelf and cars were selected in place of those which finished in third, fourth and fifth positions.

Why did the commission select the Pope, White and Christie? These cars did not, as the story of the trial shows, prove capable of going the distance of four laps, let alone ten laps.

What is known of these cars now was known

The automobile owner carries lights for his own protection; he even places himself within a blaze of flame to warn others of his approach. He knows that he will be seen, but he is not sure of seeing another and lightless vehicle in time to avoid an accident. Is there any reason why he should be compelled to exercise such care and the burden to be all his? Should he be compelled to drag along and abandon his attempt to keep up with progress just because the owners of horses and carriages do not care to keep up with the times?

The automobile clubs and associations of the country have today more work than they will ever be able to do. They have made ineffectual attempts to secure good roads and they have made equally ineffectual attempts to secure liberal legislation, all of which will come in time. There is, however, a reasonable chance that with some semblance of united effort all vehicles could be compelled to carry lights at night, and to this all automobilists should bend their efforts.

Many state and city and town corporations have laws on their statute books compelling all vehicles, however propelled, to carry lights, but good old Dobbin, with his slow and jaunty pace, has not come under the calcium, and months and years go by with the books closed and the laws violated every day. Because the horse vehicle is not a danger to pedestrians, the light carrying ordinance is overlooked, and the fact that it is a dangerous menace to faster moving vehicles—the automobile—is not considered in many towns and cities.

It is a sensible and necessary regulation; it is for the safety of the users of horse-drawn vehicles quite as much as for that of the automobilists; it is only a part of progress and it ought to be forthcoming. It ought to be a part of the work of the motorizing organizations, trade organizations and the individual motorist as well.

before the race, and with this knowledge there should have been no reason to hold an eliminating race. It is not doubted that the three cars selected to take the positions named are faster than at least two of the other cars, the makers of the touring cars make no attempt to refute this. But upon what grounds the commission ran a trial race and then disqualified successful cars one cannot figure.

So far as having a team with a possibility of preventing the Vanderbilt cup from going abroad is concerned, there is little doubt that the team has been strengthened, but if the commission was right in holding an eliminating event at all it was wrong in upsetting all precedent and throwing out cars that earned positions on the team solely by merit. If the commission can justify its position in its eliminating process it must admit its failure in rule making.

Chairman Morrell has been the dominating member of the commission and upon his shoulders most of the odium which has come up, and is still to come, will rest. The effect of the action of the commission headed by Mr. Morrell will be to chill makers to the bone and to turn their attention to work which is more profitable than fitting cars for and attending races which when won are taken from them by arbitrary action, and others—defeated candidates—given their merited positions.

Jump Sparks

Perhaps Chairman Morrell is out to make a reputation for himself.

The cars that were thrown out after the eliminating trial might tag the big fellows just to show what they can do.

One maker has hit upon a scheme to have a traveling automobile show all to itself. Why not give up the ordinary and commonplace shows and send out a dozen or so trains to all parts of the country?

The Vanderbilt eliminating race demonstrated one thing, at least—that there was little need of spending a vast sum of money to find out which cars the commission would select to represent America in the cup race proper.

Chicago's suburbs on the north shore keep up their reputations in automobile affairs. When excitement had ceased over tire shooting and bumps, a fatal accident and a hold-up were sprung. Still, property keeps soaring in price in that locality and it is even suspected that all this trouble is the work of real estate sharks.

There's an Auto, a crack harness horse, and now the sport has been honored by the same name being applied to an Aberdeen Angus bull by a South Dakota farmer. Please, someone, find a yellow dog and attach to it this same cognomen and there will be no reason in the world why the automobile should not occupy a permanent niche in the annals of the century.

The way some dealers are cutting prices would seem to indicate that either some factories are working overtime to use up parts or that some dealers were overstocked with confidence at ordering time and are now overstocked with goods. While the public may profit by the cutting, the trade at large will find no beneficial effects.

It is evident some of the entrants in the Vanderbilt eliminating race went in for the purpose of demonstrating that 1906 touring cars will stand a severe road test. Jardine evidently proposed to leave nothing undone to show the strength of his car, for, not satisfied that going over the course would do, he went the others one better by having the car turn turtle and then, after righting it, set it to work to finish the trip. If that isn't a satisfactory test then what would be required?

Through the Vanderbilt trials America got a first-class rating in the speed world. Figures show that the Florio and Ardennes races are the only ones in which a faster pace was maintained than in the Long Island trials. Raggio averaged $65\frac{1}{2}$ miles an hour in the Italian event, while Hemery is credited with 63 miles an hour in the French event. Then comes Dingley with $56\frac{1}{2}$ miles an hour. Trailing after him is Thery's $48\frac{1}{2}$ miles an hour in the Bennett and his $47\frac{1}{2}$ in the French eliminating trials. Heath did 52½ last year in the Vanderbilt. Henceforth the snail joke is eliminated when reference is made to American cars.

The Week

Pope-Toledo, Locomobile, Tourist, Haynes and Thomas cars finish in order named in American eliminating Vanderbilt cup trial, but commission rejects third, fourth and fifth cars, substituting White, Christie and Lytle Pope-Toledo; Dingley drives winning machine, averaging 56.2 miles per hour.

Mall advices on England's Tourist trophy show that seventeen out of forty-two starters finish, winning car averaging over 33 miles an hour and traveling more than 26 miles, on an average, on 1 gallon of gasoline.

Details of Florio race disclose complete victory of Itala cars, which win all three trophies competed for; Raggio goes through without tire trouble.

Collomb, in a Mors car, smashes world's 5-kilometer record; wins two contests.

Bozler tri-cars finish one, two in contest for Florio cup for three-wheelers.

Lancia, Nazarrì and Jenatzy, foreign drivers, arrive in New York.

There is food for thought in the figures of the Chicago Journal on the number of fatal accidents which occurred in Chicago during the month of August. With all the storm raised by the calamity howlers the police department records show that of the very large number of fatalities in the Windy City not a death could be laid to the automobile, whereas there were any number traceable to other vehicles. It might be added that of late MOTOR AGE has taken the trouble to make a careful count of the number of horse-drawn vehicles and automobiles on the boulevards during the past several Sundays. This count shows that for every horse-drawn vehicle there were 101 automobiles. The statistician may do all the figuring and all the counting he desires, but he will have to admit where the automobile stands.

ODIOUS COMPARISONS

One hundred and forty-seven Chicagoans were killed by violence during August, not one of them by an automobile.

Sixteen were killed by horse-drawn vehicles; fifty-nine were killed by surface, elevated and steam railroads; twenty-two were murdered; twenty-six were drowned; eleven fell to their death out of windows; eight died as the result of careless handling of matches and combustibles, and five were killed by the heat.

Not one of these deaths was caused by the "reckless chauffeur," about whom there is such a strident outcry just at present.

Yet automobiles rush through the streets at a speed three or four times as great as that of horse-drawn vehicles.

But horse-drawn vehicles killed sixteen Chicagoans in a single month, while automobiles killed nobody.

Evidently the Chicago automobile is not the deadly devil-wagon some heated imaginations have believed it to be.—Chicago Journal.

Next the Vanderbilt cup race proper and then come the shows.

The meeting of the Vanderbilt cup commission was about the first that had been heard of the A. A. A. for some time, by the way.

That average of a little 50-horsepower American car will doubtless give the foreign makers something to think about for a while. Has any foreign car of equal power ever made as good a showing? If so, the American public would like to hear of it.

President Loubet, of France, likes ex-cycle champions for his particular brand of chauffeurs on the ground that their experience in handling vehicles on crowded streets qualifies them to handle motor cars. What brand will President Roosevelt take in his, please?

The test that was made in the race last year was such as to show that American cars have stability even if with their small power they could not win. It showed that, power considered, they outranked the foreign cars, and now, with another year's experience in methods of manufacture and road racing, with a better knowledge of the requirements for a road racing car, the makers at least hope to make a better showing, if they cannot be first to the finishing line.

President Roosevelt has so far relented in his antipathy to the automobile as to allow the Duchess of Marlborough to visit him in a motor car at his Oyster Bay home, the first time an automobile had ever been allowed on the grounds. Maybe President Loubet has shamed Theodore R. into it and this may be his method of letting himself down easy. Look out for something doing when the president returns to Washington. Will it be steam, gasoline or electric?

Pompously an English critic admits that the New York Herald's census is "certainly very eloquent and shows the extent to which motor cars are now used in America" and winds up with "but what American cars have ever won an important race?" That one victory of Edge's in the Bennett race will undoubtedly keep John Bull's nose above water for many years to come. But that is ancient history now—let England do something more before she tells the Yankees to go get a reputation.

Last week a young woman was trampled to death by a team of horses right in Chicago's shopping district. The police were practically adamant over the affair, a captain making the remark that such things were to be expected about so often and that there was no way to prevent them. It is safe to assume that no automobilist would have got away with such a mild indictment. Further, there is a way to stop such things—when the police of Chicago adopt sensible traffic regulations. The remarks of the police captain, it might be added, are such as might be expected from almost any member of so inefficient a department as the police arm of Chicago's government has shown itself to be.

WINNING OF TOURIST TROPHY

Arrol Johnston Averages More Than 33 Miles an Hour and Travels 26 Miles on 1 Gallon of Gasoline in English Event—C. S. Rolls Makes Protest Against the Winning Car

London, Sept. 16.—The great Tourist trophy race has become history; the end of half a year's debate, discussion and disagreement has been reached, and we are very nearly as we were before we started on it. Of course, the result has been a surprise. In all the discussions and private speculations of the probable winner, the Arrol-Johnston car was never considered, on this side of the Cheviots at any rate—for the car comes from Paisley, N. B. It was almost a repetition of the Bennett turn up, with the exception that the Scotch cars had more luck than the Italian. While Lancia was virtually robbed of the honor of winning the Bennett event by bad luck, J. S. Napier escaped such calamity and his second string running into fourth place, made the race a great victory for Scotland.

The race took place Thursday over four circuits of the Isle of Man course, making a total distance of 208 miles 4 furlongs. The fuel was limited to 1 gallon for each 22.54 miles. Each chassis had to weigh at least 1300 pounds and not more than 1600, and to carry a load composed of the carriage body, the driver, passenger and ballast of 950 pounds. The main dimensions were specified, so that no unduly small cars could be used. The order of finish of the first half-dozen cars was as follows: Arrol-Johnston, Rolls-Royce, Pinot, Arrol-Johnston, Rover and Swift. The winner's time was 6 hours 9 minutes 14 $\frac{1}{2}$ seconds, an average of 33.9 miles an hour.

Of the original fifty-eight entrants for the race sixteen retired or eliminated themselves. Of these fourteen were peaceful and voluntary efforts before the start, but the others were sacrifices on the altar of efficiency. The 14-horsepower Gladiator ran into a herd of cattle straying over the mountain road, and the car was too badly disabled to weigh in. The 16-horsepower Swift car—a brand new design—driven by Wilton was run over a bridge by a piece of careless driving, and, though it was repaired in time to start, was not permitted as

it had not weighed in at the appointed time.

The weighing-in of the forty-two competing cars on Monday, Sept. 11, was a tedious affair and was accompanied by the usual incidents. One car had to be stripped of no less than 180 pounds and looked more like a wooden pattern car at the finish than anything else. But all managed to survive a somewhat unsatisfactory ordeal—for the accuracy of the scales was greatly challenged—and then the officials announced that the quantity of spirit decided upon as sufficient under the rules was 9 $\frac{1}{4}$ gallons, or at the rate of 22.54 miles per gallon. It is fairly certain now that had the day of the race been as wet and stormy as some of its immediate predecessors, scarcely a car would have completed the course on that allowance. As it was, the times and quantities registered during the preliminary work served to put the issue between the Rolls-Royce, Napier, Orleans, Humber, Vinot and Rover cars and these were favorites prior to the start. But the race itself told a different tale, as will be seen from the accompanying statistics of its constitution and progress over the four circuits.

It was announced that a time limit of 9 hours would be instituted, when any car not finished inside that time would be ruled out. As the first car was started at 9 a. m. and the others were sent off at 1 minute intervals, that assured that the contest would be over at 6:41 p. m. It will be seen that the seventeen cars actually accomplished the 208 miles inside that limit and most of them had gasoline to spare. The winning car had a full gallon left, the Rolls-Royce over half a gallon, and the other Arrol-Johnston very nearly a gallon, so their results and times at least are certainly remarkable, considering the nature of the course and the power of their engines. The winning car's speed runs out to 33.9 miles per hour and the second 33.7, while their mileages per gallon were 26 and 24 miles respectively. The average pace of the first six cars home was over 32 miles per hour which, it must be confessed, was an

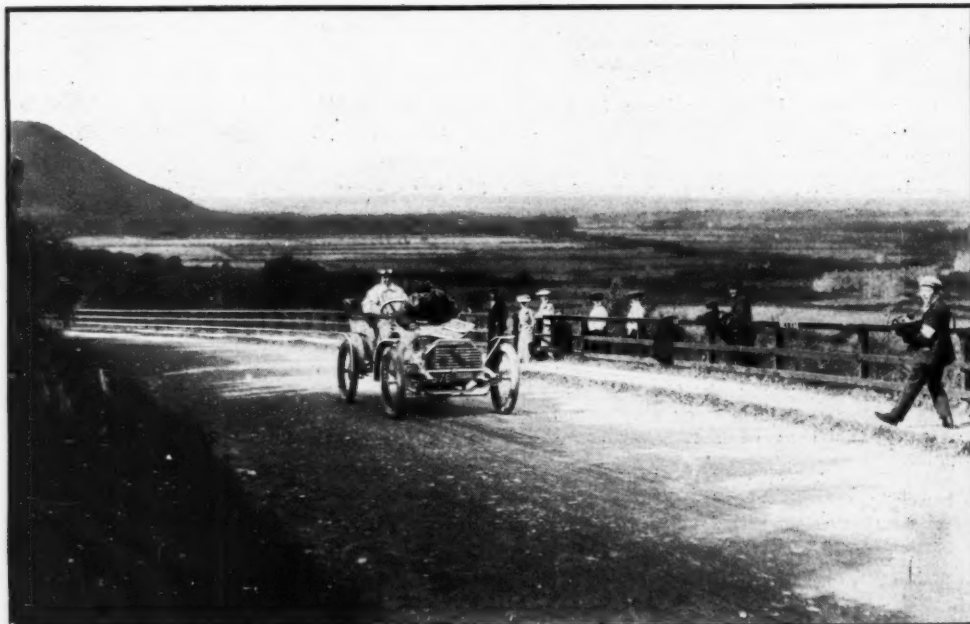
excellent showing under the governing conditions, entailing as they did four climbs of over 1,360 vertical feet each, and minor climbs of 620, 675 and 530 feet. The coasts, of course, helped to compensate, but every motorist knows that coasting never compensates for climbing when you have to average 30 miles an hour. The story of the race, apart from the unfortunates, is dispassionately summed up in the figures of the tabular statement. In racing affairs misfortune invariably provides the picturesque and much of the interest. On this occasion the rule holds good, for the Hon. C. S. Rolls, in a Rolls-Royce car, had not put in his high gear before he was put out of the race. He ascribes the incident to foul play, as he declares that he found assembling nuts which were not used on the Rolls-Royce in his gear-box and these he declares had got between his gear so that when, after coasting downhill from the start, he let his clutch in, the nuts had worked their way into the gears and he



THE ROLLS-ROYCE ON HAIRPIN TURN

smashed these on the first application of power. Some people scout the whole suggestion, but no doubt the incident will be properly investigated. This accounts for one of the hottest favorites, and he was soon followed by a 12-horsepower Speedwell, which smashed a steering wheel through taking a bad corner too fast. Then America's ill-luck started for the little 8 $\frac{1}{2}$ -horsepower Cadillac had made a grand journey of about 35 miles when in trying to take a double corner with clutch manipulation, a sprained ankle gave way and the car was run against the bank and the front wheels were wrecked. Luckily the driver, Mr. Bennett, and his mechanic, escaped with only a shaking up.

In the next round the remaining representatives of Uncle Sam were compulsorily retired; for, after having some tire troubles, Fred Coleman found his patent burner leaking so badly that he was worried into a side shed that tore a tire off and caused him to give up. Prior to this his stable companion, A. C. Kent, had charged a wall at Castletown in endeavoring to take a bad corner too fast, and so the race was left to the Britishers, with France's contributions, in the shape of the Vinot and Deguingand, the Darracqs, Clement and Peugeot to fight for supremacy. One of the four Scotch cars—an Argyll—was next driven clean into a public house at Ballasulla, and so damaged that it gave out at the end of the next round. The Wolseley, driven not wisely but too well, was charged through a hedge and though the front axle was bent and other damage done the driver pluckily effected a repairage and continued in a lame condition



MR. NAPIER'S WINNING ARROL-JOHNSTON CAR ON THE ROAD NEAR RAMSEY

after losing 2 hours because of the accident.

One of the Darracqs early came to grief through taking a corner so fast that the tire was ripped out and the wheel collapsed, a fate which also befel its comrade in the next round. Indeed, most of the mishaps arose from attempting too much with cars whose comparative high center of gravity made the course more dangerous for them than for specially built racers designed to avoid this.

Quite early in the contest the result began to shape itself for the Arrol-Johnston cars, the Rolls-Royce, Rover, Orleans and Vinot-Dequin-gand all made good times and were evidently well handled. It is customary for the earlier cars to be best in these affairs but it was the rearguard in this instance that made the best general performances, the last four cars finishing in the first five. And they held their positions unchanged throughout, as did the Rolls-Royce. Their performances were very regular and the large crowds of spectators that lined the route did not require any official intimation to herald their coming. The fastest lap of the winning car was the last which was done



DEMESTER, WINNING MOTOR CYCLIST AT ARLENS

in 1 hour 31 minutes 9 seconds, and the slowest was the third in 1 hour 33 minutes 8 seconds. The fastest round of the Rolls-Royce was also the last in 1 hour 31 minutes 8 seconds and the slowest the first in 1 hour 34 minutes.

After the race Rolls protested the winner on the ground that the car had been driven some distance without a muffler, but the protest was not sustained as the incident was accidental.

Car	First Round	Second Round	Third Round	Finish
1 Arrol-Johnston	1:32:36	3:04:57	4:38:05	6:09:14
2 Rolls Royce	1:34:00	3:07:33	4:39:15	6:11:23
3 Vinot	1:34:30	3:08:32	4:41:57	6:14:35
4 Arrol-Johnston	1:36:40	3:14:00	4:52:56	6:38:58
5 Rover	1:38:47	3:17:25	5:01:34	6:43:53
6 Swift	1:40:44	3:32:21	5:18:15	7:01:12
7 Orleans	1:44:00	3:32:40	5:23:20	7:07:42
8 Argyll	1:49:53	3:37:18	5:24:47	7:10:25
9 Orleans	1:41:28	3:30:31	5:22:58	7:19:32
10 Napier	1:48:32	3:49:55	5:38:37	7:27:44
11 Standard	1:49:24	3:39:18	5:32:34	7:28:02
12 Rover	1:41:40	3:24:59	5:49:26	7:41:33
13 Peugeot	2:10:28	4:17:03	6:40:40	7:58:54
14 Ryknfield	1:57:43	3:55:06	5:54:56	8:11:44
15 Napier	1:49:05	3:51:54	5:53:33	8:17:10
16 Dennis	1:57:05	3:57:51	6:05:01	8:26:00
17 Dennis	2:18:47	4:32:46	6:38:31	9:58:48

ITALIAN CUSTOM DUTIES

Paris, Sept. 16—The Touring Club of France has just communicated to the press an important change in the Italian customs duties, as the result of the law of July 5, 1905. Instead of being taxed according to their wheels and the number of springs, a system which had nothing to commend it, automobiles entering Italy will pay in future according to the following tariff: Up to 1,100 pounds, \$40; from 1,100 to 2,200 pounds, \$80; from 2,200 pounds upwards, \$120.

NOVEL IDEA BY WINTON

Cleveland Concern Builds Railroad Car to Carry New Samples Around Country

Cleveland, O., Sept. 26—The Winton Motor Carriage Co. has instituted a novel and interesting campaign—one that is bound to attract attention. In a specially designed railroad car containing the latest models, Charles B. Shanks, with several assistants, started this morning on a trip of 8,786 miles from ocean to ocean, visiting all the principal cities where the company has agents, thereby enabling these agents to see the new models several months in advance of the New York show. The exhibition car contains practically everything that the Winton company will exhibit at New York. The car was built by the Lake Shore & Michigan Southern road, is 60 feet long, and is provided with two wide doors on either side and a large door at one end. The exterior of the car bears oil paintings of the Winton factory, the new model K car and the Winton escutcheon. The interior is in white and gold, with green tapestry and flooring. It is brilliantly illuminated by over 300 incandescent lamps. At one end, partitioned off by curtains, is a private office handsomely furnished with mahogany desk, chairs and settees, and with antique rugs covering the floors. Steps for the entrance and exit of visitors and skids to be used in taking machines from the car are carried beneath the floor, as are large boxes of literature, additional parts, etc. In the exhibition room are a model K with blue body, a specially finished chassis, and a car for demonstration purposes. When the latter is removed, shelves containing parts will be lowered into place. Mr. Shanks and his assistants will travel in sleepers on the same trains with the exhibition car and arrangements have been made to handle the exhibition car on all fast trains. The dates and places to be visited now scheduled are: Detroit September 25 and 26; Buffalo, September 27 and 28; Rochester, September 29; Boston, September 30 and October 1, 2 and 3; Providence, October 4; New York city, October 5, 6, 7 and 8; Philadelphia, October 9, 10 and 11; Pittsburg, October 12 and 13; Columbus, October 14; Cincinnati, October

15 and 16; Indianapolis, October 17; St. Louis, October 18 and 19; Chicago, October 20, 21 and 22; Milwaukee, October 23; St. Paul and Minneapolis, October 24 and 25; Omaha, October 26 and 27; Kansas City, October 28 and 29; Denver, October 30 and 31, and November 1; also Salt Lake, Sacramento, San Jose, Fresno, San Francisco and Los Angeles, from which place the trip will be made straight back to Cleveland, arriving there November 23, just 60 days after leaving.

FRANCE GETS A RECORD

Paris, Sept. 10—Collomb, driving a Mors, smashed the 5 kilometers world's record in winning the Rothschild cup at Arles, in the southern part of France. He covered the distance in 2 minutes $\frac{1}{2}$ seconds, or at the rate of 95 miles an hour. Stead, in a Mercedes, was second in 2 minutes 6 $\frac{1}{2}$ seconds. The former used Michelin and the latter Continental tires. In the 1-kilometer trial Collomb and Stead tied for first place with 26 $\frac{1}{2}$ seconds. De-meester was just as bright a star in the motor cycle events. Riding a Griffon, he took the 5 kilometers in 34 $\frac{1}{2}$ seconds and the 1 kilometer in 2 minutes 54 seconds. Robert, on a Buchel, was second to him in the former, and Lamberjack, on a Griffon, in the latter. In the tourists' race at 5 kilometers, Rivierre, in a Cotterau, won the 9,000 francs class in 5 minutes 10 $\frac{1}{2}$ seconds. Mottard won in 2 minutes 40 $\frac{1}{2}$ seconds in the 20,000 francs class and Bablet in 2 minutes 50 $\frac{1}{2}$ seconds in the class for cars listing at more than 9,000 francs. Rivierre also won the kilometer for his class in 1 minute 3 $\frac{1}{2}$ seconds. Mottard, in a Chantiers de La Buire, beat Fabre, in a Berliet, in the race for 20,000 francs cars, while Bablet, in a Berliet, took the event for the highest priced cars in 35 $\frac{1}{2}$ seconds.

DEWAR RACE IN NEW YORK

New York Sept. 24—It is announced that in all probability the second contest for the Sir Thomas Dewar 1-mile straightaway international automobile trophy will take place over the Coney Island boulevard in October. The American Automobile Association will be asked for a sanction for the date of October 18, 4 days later than the Vanderbilt international road race, so as to give the foreign drivers then in this country a chance to compete.



COLLOMB, FRENCHMAN WHO BROKE WORLD'S 5-KILOMETER RECORD

FOR THOSE WHO TRAVEL

State Department Gathers Information Concerning Frontier Regulations Abroad

Washington, D. C., Sept. 18—So many American automobilists have applied to the state department for information regarding the frontier regulations for automobile travel in Europe that the government has found it expedient to prepare the following abstract of the frontier regulations respecting customs duties, etc., affecting travelers by automobiles and motor cycles entering various European countries for temporary sojourns. This abstract is worthy of preservation by all automobilists who contemplate touring Europe at any time:

Austria—The duty on automobiles and motor cycles must be deposited and a receipt taken at the time they enter the country. This money will be repaid to the traveler on his recrossing the frontier with the car if the receipt is presented to the customs authorities. The receipt is valid for 2 months and may in certain cases be extended, but not beyond December 31 of the year of issue.

Belgium—The duty is 12 per cent ad valorem, paid on entry; receipt valid for 1 year is given.

Denmark—No duty is collected on automobiles for traveling purposes. A simple declaration of the traveler that the entry is temporary is sufficient.

Germany—Automobiles and cycles are identified at the last custom house before leaving German soil, so that there may be no additional proceedings on their re-entering the country. On foreign automobiles the duty is \$35.70 each. The automobile is provided with a lead seal. The amount will be repaid if the receipt is presented at the custom house when the machine is taken out of the country.

England—Automobiles in condition for use are duty free. There are no special requirements.

France—On entry of automobiles into France a guaranty must be deposited, viz., \$9.65 for 220 pounds if the car weighs more than 275 pounds, and \$23.16 if it weighs less than 275 pounds. The customs receipt is good for 6 months, and the amount will be repaid to the traveler on his leaving the country.

Greece—Besides a non-returnable fee of a few drachmas—1 drachma equals 19.3 cents—the duty on automobiles is calculated according to a special tariff. When the car leaves the country the duty is repaid, but 97 cents for expenses and an additional payment are deducted if it does not repass the same custom house as on entering.

Italy—For motor cycles with two or more wheels \$8.22 duty must be deposited. Automobiles with two wheels and three springs attached directly to the vehicle pay \$21.23. Motor cars having more than two wheels and three springs which are attached directly to the vehicle or by means of auxiliary springs pay a duty of \$63.69. The receipt is valid for 6 months, but the period may be extended to 1 year through a written application made before expiration of the 6 months. The money will be refunded to the traveler on leaving the country.

Luxembourg—Automobiles are duty free if in condition for use on entering from Germany, as Luxembourg belongs to the German

customs union. The duty is \$35.70. The duty will be refunded when the tourist leaves the country on condition that he has given a notice containing a description of the automobile and place of entering and leaving the country to the custom house in Luxembourg 10 days before his entry.

Netherlands—Automobiles are free of duty if used for traveling, but the frontier customs official has discretionary authority, as a matter of precaution, to demand a deposit, which may not exceed 5 per cent of the value. The receipt is valid for 1 year, and the duty will be refunded on presentation to any frontier customs official by the traveler on recrossing the border with the vehicle.

Norway—Automobiles are free of duty as a means of traveling. The traveler must make written declaration that the vehicle is for the purpose of travel and is being entered for temporary sojourn only.

Portugal—Duties are established for particular cases. Deposit will be refunded when car is taken from the country. Notice by letter or telegram should be given to the frontier customs official concerned.

Roumania—Duties on vehicles are according to a special tariff. There are many requirements when the car is taken from the country. Previous notice is advisable.

Russia—Vehicles can cross the frontier only by special permission of the minister of finance, obtained by written request. The duty for a two-seated vehicle is \$46.35 in gold and 20 per cent extra for coach and trimmings; for a four-seated or larger vehicle the duty is \$67.98 in gold and 20 per cent extra. Duty on the motor is additional, according to a special tariff. There are many requirements to be fulfilled. Duty will be refunded to traveler in 2 to 10 months, when he leaves the country with the machine.

Sweden—A duty of 15 per cent of the value of the car is required to be deposited, to be refunded when the car is taken out of the country. Under some circumstances expenses may amount to about \$1.47.

Switzerland—A free passport of admission for 6 months is granted for automobiles with lead seal attached. Otherwise the rates of duty are \$3.86 for 220 pounds and 77 cents for 220 pounds of the motor.

Spain—A duty of \$3.57 is levied per 220 pounds for motors, and for vehicles according to form, varying from \$67.55 to \$193. The receipt must be duly confirmed by the frontier customs official when machine is taken out of the country before presentation at the custom house first passed on entering the country in order to have deposit refunded.

Turkey—A duty of 8 per cent is collected on vehicles. Two per cent will be refunded to traveler when his machine is taken out of the country. An excessively high assessment should be guarded against.

It is sometimes necessary, and always advisable, to have an authentic description of the automobile, weight, number, etc., signed or stamped by the manufacturer, to be presented at the frontier or elsewhere.

MILLION DOLLAR CAB COMPANY

London, Sept. 13—A \$1,000,000 motor flotation is pending here and as soon as the necessary arrangements are through the company will commence business. The capital is already subscribed and the purpose is to provide London with a motor cab organization which is intended to supersede the gondola of our streets—the hansom cab—before many months.

MAY SUE FOR EXPENSES

Makers Whose Cars Were Rejected By the Vanderbilt Cup Commission Consult Lawyers.

New York, Sept. 27—Special telegram—Harry Hout, entrant of the Thomas racer, which was qualified but was rejected for the American Vanderbilt team, is in conference with his lawyer with the idea of suing for the recovery of his entrance fee and \$1,200 expenses. It is reported that the Royal and Haynes people are considering taking similar legal actions. The action of the commission in throwing out the Royal, Haynes and Thomas to make room for the White, Christie and Lytle Pope Toledo is the talk of the town, and many think the ousted ones have a chance to recover expenses by going to law. Whether this step will be taken is a question which has yet to be decided by the makers.

Lancia and Nazarrri, members of the Italian team, arrived Saturday. They were too late to witness the eliminating trial. When they learned the result and the times that had been made they expressed themselves as greatly pleased that the course had proved safe and so fast. At an early hour Sunday morning Cedrino, another member of the team, took them over the course in a touring car. The Italian cracks were enthusiastic over it and prophesied marvelous time on October 14. The Italians are awaiting the 120-horsepower Fiats, which they are to drive in the race and which are due on the Liguria this week. On their arrival they will take up their quarters at the hotel which Hollander & Tangeman have leased for the use of the Fiat team during the preliminary practice for the race. The Italian team is a decided favorite for the big race on the basis of the successful showing made by Lancia and Nazarrri in the Bennett and Florio cup races and by Chevrolet and Cedrino on the tracks and beaches in this country.

Jenatzy, who is to drive a Mercedes for Robert Graves in the Vanderbilt race as a member of the German team, arrived here Monday on the steamer Finland and Antwerp.

Lancia and Nazarrri went over the course again yesterday in a touring car. Lancia was enthusiastic over it and prophesied that the winner would show a rate of at least 63 miles an hour.

PORTLAND ROADS OILED

Portland, Ore., Sept. 23.—An oiled road extending 4 miles from the Lewis and Clark exposition grounds to Claremont tavern, a road house on the Willamette river bank, has been used 6 weeks by the Portland Automobile Club and all classes of public travel, and is pronounced a success. The automobile club, which subscribed \$2,500 to pay for the experiment, will continue the subscription work until it has collected \$10,000, and will oil other beautiful public roads about Portland. The width of the oiled roadway is 12 feet, and its cost for the first oiling was about \$450 per mile, by contract. It is said the road will need a light renewal of oil each year, which can be done at an expense much less than the original oiling. The automobile club will oil roads in future on its own account, simply securing permission from the county to carry on the work. It is necessary to use only the heaviest oil, containing about 80 per cent asphaltum.

The Motor Age



The scene was changed; the horse was gone,
A dustless caravan rolled on—
Departed was the jar and twang,
The endless crush and crash and bang.

"Peace," said the man. "Peace be to thee."
A piercing stare he fixed on me,
Then made a pass above my head;
"Sleep thirty-seven years," he said.

So thirty-seven years passed by,
And then—of course, I don't know why—
I stretched and gave myself a shake
And presently I was awake.

Quite naturally, of course, I knew
That it was Nineteen Forty-two;
And just as naturally, I took
Myself outside to have a look.

A footman met me, bowed his head,
"Your pleasure, sir?" the fellow said.
I answered, when I got my wind:
"Hitch me a horse!" The fellow grinned.

"Caitiff," yelled I, "Blackguard, thief—
A horse!" He trembled like a leaf—
"A horse? Ah, sir, what can I do?
They've only got them in the zoo."

"Depart," I cried. "Begone, then, gawk,
If that's the case I think I'll walk."
So off with walking stick in hand
I strolled to see how lay the land.

The day was fair; a pleasant breeze
Was rustling through the cypress trees;
But even fairer was the scene
That lay within its silv'ry sheen.

Before me, stretching far away,
A great, white, glimmering city lay;
Its towers and spires rearing high
Against a cloudless, dustless sky.

There, like the lines upon a chart
The streets within the city's heart,
Still busier than in earlier time
But lacking dint and dust and grime.

With quickened pulse and eager feet
I passed along the pleasant street—
A street unlike to those of yore
As gravel path to ball room floor.

I reached the busy thoroughfare
Which once had surged with moving ware;
Where crash and jar of van and cart
Had stricken terror to the heart;

Where prancing horse and crunching wheel
Had e'enmost made the blood congeal;
Where rattling drays on cobble stones
Had jarred the marrow of men's bones.

No one yelled "whoa!" nor yet, "git-ap!"
The hitching post, the greasy strap,
The creaking cart and horse coupé.
Were all the things of yesterday.

Still one thing more the city lacked,
There seemed to be no street car track;
And poles and wires which marred the view
Had given place to something new.

Before me in a bright array
Passed phaeton and car and dray;
But softer shod than those of yore
And brighter far than e'er before.

The thrub of motor, buzz of gear
Displaced the sounds I used to hear;
The glint of brass, like burnished gold,
Displaced the rusty things of old.

Then, as I watched, against the sky
A white-winged object caught my eye;
Like some illumined cloud at night,
It noiselessly pursued its flight.

Still others followed in its wake
Like ships on an inverted lake;
Combating with apparent ease
The vigor of the summer breeze.

I sighed as e'en my sires sighed
When Progress with her onward tide
The stage and pack horse swept away
For locomotives in their day.

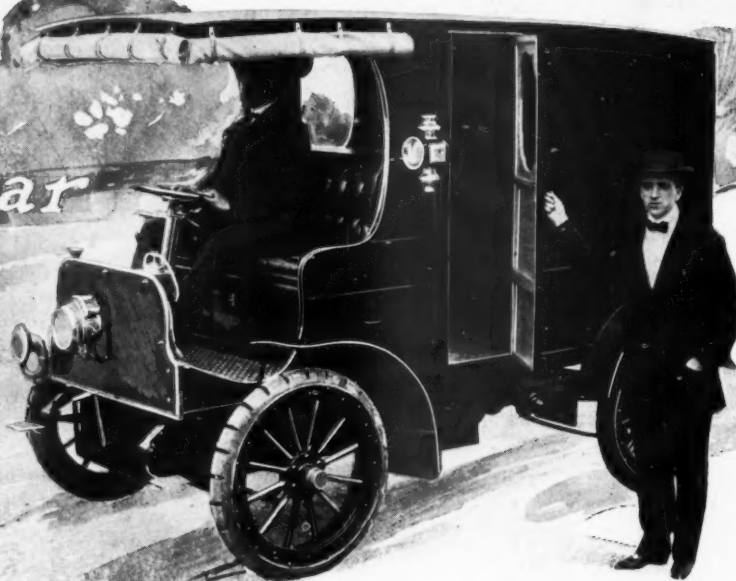
My day was passed—there was no doubt
That I'd been counted down and out;
A newer scene was on life's stage,
Portraying forth the MOTOR AGE.

—ROY O. EASTMAN.



The Realm of the Commercial Car

The Acme Delivery Wagon



THE Acme delivery wagon, manufactured by the Acme Motor Car Co., of Reading, Pa., can be properly considered the latest addition to vehicles built strictly and solely for delivering purposes. It is a 16-horsepower machine with two vertical cylinders mounted beneath the driver's seat, from which power is transmitted through a friction clutch, sliding gear transmission and double side chains to the rear wheels. The Acme company has built the car to withstand the heavy service generally given commercial machines, and, with this aim in view, uses a motor that has served in pleasure cars, but all other parts of the machine have been designed and built for business uses. The entrance of this concern into the commercial sphere is another indication of the trend towards commercializing city teaming in America, and the fact that the company has already over twenty machines going through is proof that the venture is not a little side experiment but a decided step into this unlimited field of automobile usefulness.

The wagon has a 1,000-pound carrying capacity and is unique in possessing double doors in the rear and side doors immediately behind the seat, making all parts of the carrying compartment readily accessible. The wagon is well suited for departmental work, laundry purposes, furnishing houses, floral concerns, confectioners and innumerable other business enterprises where loads do not exceed the 1,000-pound mark and where a speed of 12 to 15 miles an hour is needed. The field for this style of machine is perhaps the widest in the commercial realm, business companies being located in every city over 15,000 population in which one or more machines could, with advantage, be installed. Houses at present using only one horse wagon would not be justified in installing even the smallest motor wagon, as the advantages of the commercial motor is where it has an opportunity of doing the work of at least two horse wagons and better still where it replaces three or four horse vehicles.

The main frame has two channel side pieces each 4 inches deep in the center, 1 3/4 inches wide and of a medium thickness of 3-16 inch. These pieces are narrowed alongside the motor and taper toward the front and rear, where they are curved downward. The motor and transmission are carried on a channel steel sub-frame of two pieces 1 3/4 inches deep, with 1 1/2-inch channels and 3-16-inch thickness. The opening in these channels is turned to the outside, the reversed position of the main frame side pieces. The sub-frame is carried on dropped channel cross pieces of the main frame. These pieces fit

within the channel of the main frame and have integral gusset plates that overlap, with similar plates on the main frame pieces. The sub-frame pieces also fit within the channel of the cross pieces and are riveted to both the top and bottom parts of the channels. The frame is especially made to withstand heavy strains, the gusset plates and heavy channels being used with this aim. Four semi-elliptic springs carry the frame. The front springs have six leaves, are 3 1/2 feet long and 2 inches wide and the rear springs are made with eight leaves 3 feet 8 inches long and 2 inches wide. The rear springs are swung outside of the frame and are double pivoted to the spring hangers at the rear. The stationary rear axle is a forging, with a section 1 1/2 inches square, and the front is a centrally dropped forging of the same measurements. Both the 34-inch front and rear wheels revolve on double sets of roller bearings of the inclined type and are encircled

with 3 1/2-inch solid rubber tires. Elliott steering knuckles are brazed and pinned in place on the axle ends and steering is through an irreversible Brown-Lipe gear.

The motor, rated at 16 horsepower, has separately cast cylinders 4 1/8 by 5 inches. The running speed is 1,000 revolutions per minute. The motor is placed lengthwise beneath the seat, with the crankshaft carried longitudinally in the center of the frame. Each cylinder is an integral casting, with the valve port on the left side, the automatic inlet valve in the top of the port and the exhaust in the bottom. The crank case is an aluminum alloy secured to the sub-frame by arms on the top half, leaving the bottom part serving as an oil case. The crankshaft is a drop steel forging with three bearings, the two end bearings 1 5/8 inches in diameter and 3 1/4 inches long and the middle one of the same diameter but only 2 1/2 inches in length. The throws on the shaft are set at 180 degrees. The pistons have three compression rings and an oil groove. The connecting rods are forgings hollowed out on the side, with bearing in the crank pin end 2 1/4 inches long, and the wrist pin end of the same length and 3/4-inch diameter. The wrist pins are fastened in place with pins, which are secured against loosening.

The valves are interchangeable, each set having a diameter of 1 3/8 inches and a 5-32-inch lift. The valves, made from drop forged steel, have the head and stem integral. The former is thick and slightly arched on top. The stem is 8 inches long and has 3/8-inch diameter. The inlet valves are easily removable, being readily accessible when the floor of the driver's seat is raised. The exhaust valves are removed through the inlet valve openings. The camshaft is within the crankcase and has the cams both keyed and pinned in place. Rollers are used on the bottom of the pushrods.

The ignition current comes from two cells of storage battery carried beneath the center of the left side of the frame, from which the current passes through a Splitdorf timer on the front end of the camshaft. From here the current passes the vibrator coil on the dash and to the plugs placed horizontally in the left side of the valve ports, midway between the inlet and exhaust valves. The spark advance lever is on the top of a quadrant carried beneath the steering wheel.



DOUBLE REAR DOORS OF ACME WAGON

The carburetor is of Acme manufacture, with float chamber, needle valve in the top and separate mixing chamber. The entrance of air as well as the passage of mixture to the valves, is under governor control at low speeds but with the motor being speeded the governor is cut out and the control rests with the spark lever and a throttle lever located on the steering column quadrant. The gasoline tank, with 18 gallons capacity, forms the back of the driver's seat, but is enclosed behind the seat springs and heavy upholstery.

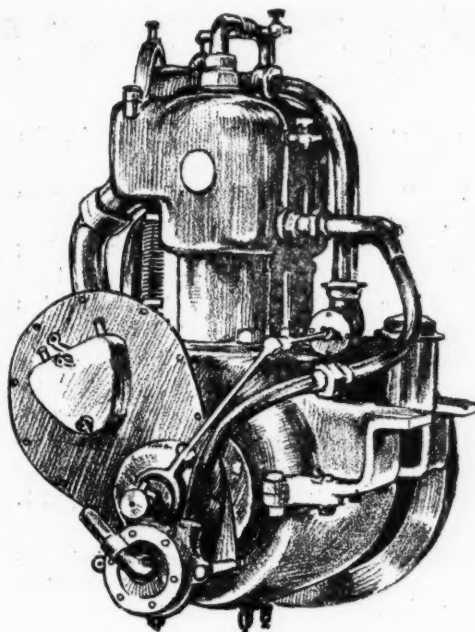
A radiator and water tank are used in cooling. In keeping with general practice the radiator is tubular with eighteen tubes each 2 feet long. Above the radiator—which is hung between the front springs—and the frame side pieces is a 6-gallon copper water tank encased beneath the slanting front part of the footboard. The course of the water is from the bottom coil of the radiator to a gear-driven pump to the bottom of the water jackets at the left and back to the radiator.

The cone clutch has a leather lining on the male part which is forced into engagement by a coil spring. Behind it is the three speed and reverse sliding gear transmission. The gear case is an aluminum casting. The top of the case is a large inspection cap or plate. Within the case is the main shaft and to its left the countershaft, the former carrying gears rigid in place with the latter carrying the three sliding gears by means of four keys. The drive is not direct on the high speed, the bevel meshing with the bevel on the differential being on the rear end of the countershaft. The high speed is gained by meshing the front pinion of the countershaft with the front pinion on the main shaft. Both shafts revolve on ball bearings with end thrust cones. The change speed is through a horizontal short lever on a quadrant on the right side of the steering column and just below the steering wheel.

The lubrication of the motor and transmission is through a gravity feed system. On the dash, in front of the operator, is an oil reservoir, from which the oil flows to the crankcase, where it is splashed by the throws on the crank. The splashed oil is caught in oil holes above the several different cylinder bearings and also in grooves in the pistons.

Four brakes are fitted, all of the external band type. Two are on the differential jack shaft, one at either end. The drums, 8 inches in diameter and 1½ inches wide, are applied by the clutch pedal. On the rear hubs are emergency brakes, applied by a side lever, the movement of which also releases the clutch. The emergency brakes have drums 10 inches in diameter and 2¼ inches wide. The brake bands are leather lined.

The body design is novel in that double doors are used in the rear and single doors 16 inches wide on either side, just behind the seat. In these doors are scroll-shaped windows. The carrying compartment is 78 inches long, 42 inches wide and 60 inches high. The driver's seat has accommodation for one or two jumper boys and is upholstered in leather. The top of the carrying compartment projects above the seat and has drop front curtains, with large tarpaulin window, as well as side curtains with similar windows. The back of the seat is fairly low and broad, giving a table-like effect on which delivery boxes can be carried. At either end of the seat are lock-doors which when opened dis-



TWO-CYLINDER ACME MOTOR

close the sides of the motor. The front part of the seat is a drop door also. The body is finished in deep blue with red running gear. The weight of the machine complete, with standard delivery body, is 2,500 pounds.

FIFTH AVENUE'S LINE

Fifth avenue, New York, has been selected as the testing ground for the first passenger omnibus line driven by a gasoline-electric motor to be operated in a large city in America. The big double deckers, covered with glaring advertisements, are common sights in European cities, but the debut of the street car mounted on an automobile chassis was reserved for a week ago in New York, when a large omnibus, with carrying capacity for twenty-eight passengers and operated by the Fifth Avenue Coach Co. made its initial runs between Washington Square and Eighty-eighth street. The vehicle is under test at the present time and if this class of machine proves a success scores of the electric vehicles now run for passenger purposes in the city may be sent to other places. The machine is the result of the combined efforts of the General Electric Co., the Vehicle Equipment Co. and the James B. Brill Co., the first concern designing the

chassis and providing part of the machinery, the second company building the chassis and the last producing the body.

The power plant consists of four units—a 40-horsepower vertical four-cylinder gasoline motor of Speedway manufacture, carried beneath the driver's seat and easily accessible for replacements, examinations or adjustments; a 45-horsepower electric generator coupled direct to the crankshaft of the motor; two electric motors built by the General Electric Co., which, by the way, built the generator used, coupled to the rear road wheels and supplied with current from the generator and a storage battery—two of ten cells each of Exide battery carried beneath the center of the chassis frame. The storage battery is used for furnishing current for incandescent lights within the omnibus and on the platform and also to supply the generator when starting the machine, so that the generator starts the gasoline motor and cranking has not to be resorted to. The battery does not receive any of the extra current supplied by the generator and delivered to the electric motors on the rear road wheels, but has to be charged each evening, enough current being carried by the battery for a night's lighting and all the necessary starting. The two electric motors are not geared direct to the rear road wheels, but are carried from the chassis frame some distance in advance of the axle, thereby being relieved from the jars of the axle. The drive from the motors to the wheels is through heavy roller chains.

The frame is heavily made and the stationary rear and dropped front axles are built for heavy service. The frame pieces are carried on semi-elliptic springs, working in sliding blocks. Artillery road wheels shod with flat and very wide solid rubber tires revolve on plain bearings. The front axle carries steering knuckles which are geared to a vertical steering column. The control levers for the gasoline engine, the electric generator and the switches to the electric motors are on either side of the driver as are the brake mechanisms.

The omnibus body is of typical double truck street car design, different in that passengers can enter only at one side in the rear. Within fourteen seats, accommodating two passengers each, are placed crosswise of the car, seven on each side, with an aisle down the center.



TYPE OF MOTOR BUS USED ON FIFTH AVENUE, NEW YORK

COMMERCIAL STEPPING STONES

New Firm—The Guernsey-Belmont Motor Transit Co., of Fairview, O., has been incorporated with a capital stock of \$10,000.

Jersey Bus Line—A public automobile line is being talked of for Montclair, N. J., with Daniel B. Ely and C. H. Stillman, two New York business men, as its promoters. Application has been filed with the local council for a franchise, contemplating a fare not to exceed 2 cents a mile and a minimum rate of 5 cents.

Dropped the Hoss—Chief Larkin, head of the fire department in Dayton, O., now goes to fires in an air-cooled Marion car, recently purchased for him by the city fathers of Dayton. The chief's old horseman, George Rees, is piloting the machine, which, with its brass trimmings and other extras, imitates the splendor of the orient.

Big Test Trip—The Monarch, a monster four-wheel drive commercial truck, owned by Edgar E. Darling, is at present making a 1,000-mile tour of the roads of Nevada, with the object of testing the reliability of the machine on desert roads. The first part of the trip consisted in mountain climbing, which was successfully accomplished. The machine is 11 feet long and has a 104-inch wheel base. The weight is 2,500 pounds.

Second a Success—Motor car No. 2, built by the Union Pacific railroad and operated over its lines between Kearney and Callaway, Neb., is proving a big success. The car differs very much from the first one, in that it is mounted on double trucks, is 55 feet long and seats fifty-six passengers, whereas the first one was 30 feet long and accommodated but twenty-five people. The new car has been running for some time between South Omaha and Cut Off lake with excellent regularity and speed as high as 52 miles per hour. On September 14 a test run was made from Omaha to Valley, Neb., and return with a load of fifty-six passengers. The maximum speed made was 52 miles per hour. The return trip was made in 6 minutes less than the time required by the Overland limited, the Union Pacific's best train.

Motor Dummy Line—The Dummy line is the name Kentuckians will give to a new automobile stage route to be started the first of the year between Mt. Sterling and Owingsville, Ky. C. F. Stephens, who will operate the line, is a deaf mute who has made money and notoriety by traveling over the country with carnival companies in the interest of confectionery concerns whose products he has sold. The distance between the above mentioned places is 15 miles and the proposed schedule of travel calls for three daily trips. The first leaves Owingsville at 5 a. m., in order to catch a 5:30 train at Mt. Sterling, the second about noon and the last at 7:20 p. m., after the arrival of the Lexington trains. The object of the line is the placing of the Owingsville people in closer communication with Lexington and Louisville. Mr. Stephens is

at present in Indianapolis arranging for the purchase of the first machine.

The Farmers' Auto-Motor Co., of Kansas City, Kan., is manufacturing a 30-horse-power motor for plowing, threshing, hauling grain to warehouse, grinding grain and all kinds of agricultural duties. The motor has a speed range of from 1 to 16 miles per hour.

Motor Paper Route—The Dayton, O., Daily Journal has established an automobile delivery to Fairfield, Osborn, Medway, New Carlisle and Springfield. John Burgamy, the day and night driver, operates the car, the starting time being 2:30 a. m., returning at 7. The round trip is 70 miles.

Railroads in Line—According to information recently given out by Russell Harding, president of the Great Central route, which includes the Cincinnati, Hamilton & Dayton and the Pere Marquette railroads, it has been positively decided to install gasoline motor cars on the score or more branches of the main lines.

Quakers Have a Line—An electric automobile line is to be inaugurated in the spring along Broad and Diamond streets, Philadelphia. A test of the system has been made by Charles Berg, of Cleveland, who is at the head of the venture. Fifty machines will be placed in commission and power houses will be erected along the route.

Waiting for First Car—Otto Mears, of Silverton, Colo., is at present awaiting the arrival from the east of a large passenger automobile, to be used for passenger service on the Red Mountain & Silverton railroad and the Silverton Northern line for the transportation of passengers over these lines. Should the experiment prove successful the Red Mountain line will be extended to Ouray.

Biggest in Country—California has one of the biggest tally-ho automobiles in the country. A week ago the Panhard Automobile Country Club left Los Angeles with a load of sixteen passengers, although a load of twenty-two can be carried, ten within and twelve on top. The big machine, resembling a stage coach of the gold field days, left Los Angeles at 10 o'clock and drove to the Palms and through beach towns, where luncheon was had. The city was reached by 7 in the evening and the only accident of the day was the toppling of one passenger off one of the out-

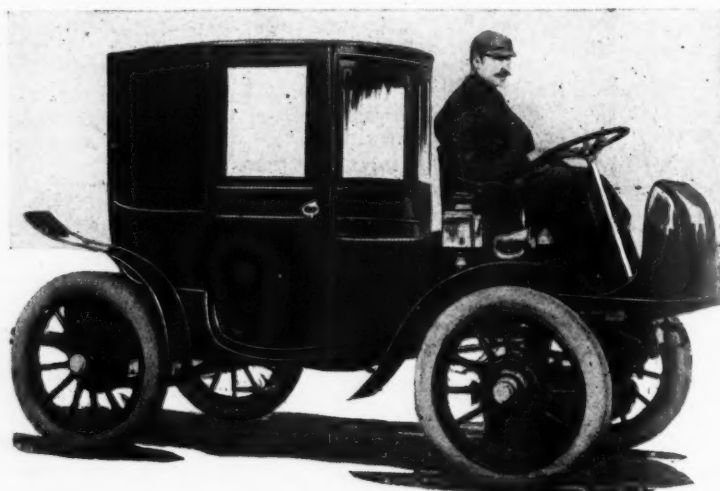
side seats when a corner was taken at a smart rate of speed.

Regular Service—A regular bus service is to start September 1, between Edinburgh and Queenferry, Scotland. The Scottish Motor Traction Co. will operate the buses which will be of the double deck variety with the top seats exposed or protected by a canopy.

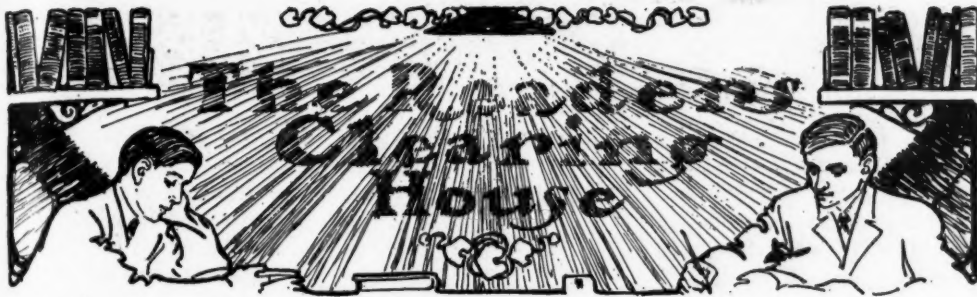
A Farm Affair—The Kemp & Burpee Co., of Syracuse, N. Y., had the only automobile manure spreader in existence on the state fair grounds at Syracuse recently. A light gasoline engine was placed in an ordinary spreader, which held 75 bushels of manure, and the affair was run about the grounds as an automobile spreader.

Reo For R. F. D.—Karl Wiedeman, of El Dorado, Kan., is an enterprising rural free delivery mail carrier, who for 8 weeks has been making his regular daily trips in a Reo automobile. Each day's run aggregates 30 miles. El Dorado is left at 7 in the morning, and the trip completed at 10:30, only 3½ hours being needed for it. He took the machine out of the salesroom and made the first trip without an instructor, using the instruction book as his guide. In 8 weeks the only trouble has been one puncture.

Electrics in Long Test—Electric vehicles have been much in the public eye in France of late and the long-distance road tests have shown that the electric machine is well suited for road work and can make good speeds. In the latest tests two Kreiger machines and a Vedrine participated. The Kreiger landau carried four passengers and forty-two cells of battery weighing in all 3,934 pounds. The Kreiger coupe carried two passengers, forty cells of battery and had a total weight of 3,498 pounds. The weight and passenger capacity, as well as battery equipment, of the Vedrine machine are not known. The test was made over the country roads from Saint Germain, near Paris, France, to Evreux, 64 miles distant, and then on to Deauville, which is 122 miles from the starting point. The Kreiger coupe left Saint Germain at 6:02 and reached Evreux at 7:23, making the run at an average speed of 46 miles per hour. The landau left at 6:05 and reached Evreux at 7:29 and the time needed by the Vedrine machine was from 6:12 until 9:02. From Evreux to Deauville is 58 miles. The Kreiger landau left the former place at 11:04 and reached Deauville at 1:23. The time for the landau was from 11:06 to 1:34 and Vedrine's time was from 9:07 to 12:42. The return journey from Deauville to Saint Germain was made in about the same time on the following day. After running his machine 60 miles on one battery charge Kreiger, to prove that even then the batteries were not exhausted, drove 500 meters over a measured course at high speed and then the batteries were in good shape. The tests have aroused wide interest in passenger service in Paris and other centers where large numbers of electric machines are in operation.



KREIGER'S FRONT-WHEEL DRIVE ELECTRIC LANDAU



SINGLE TUBE TIRES

Decatur, Mich.—Editor MOTOR AGE—Some motorists in this section are advocating the use of single tube tires in preference to either double tube, cushion or solid. In 2 years' experience I have not had a puncture, but have had plenty of trouble with inner tubes of a much-advertised tire, but another make has not been touched since it was put in over a year ago. Motor troubles can be largely guarded against or often easily remedied, and what is most needed at present is some kind of tire which can be depended upon to carry its user over any kind of roads at any time with comfort and safety. Deliver us from the delay and annoyance of roadside tire repairs in either mud, cold, heat or mosquitoes!—A. E. Lawrence.

When automobiles were first in use they were all equipped with single tube tires. Their abandonment has been caused by a survival of the fittest. If everyone could be as fortunate as Mr. Lawrence has been there would be no need of the double tube tire. In case of a puncture or cut the repair can be made more lasting on the double tube than would be possible with a single tube. With the latter one must have rim cementing and other evils with which to contend. The replacing of an inner tube is not a pleasant prospect, but the repair can be made in less time than if a single tube was used. With the modern detachable rim it is such a simple matter to replace a tube that no one should object to the labor. The only sure way to obviate punctures and the like, is to use a solid tire, and even then it is quite unlikely that you will wholly forget the machine has tires.

GREATEST EFFICIENCY

Des Moines, Ia.—Editor MOTOR AGE—I am anxious to know what is the most power that has been obtained from a gasoline engine with bore of $4\frac{1}{2}$ inches and stroke of 6 inches. I want this information to settle a dispute. A brake test of one that has been used is hardly fair, since it may not be working at its highest efficiency.—John Comin.

With all conditions most favorable it is possible to obtain $7\frac{1}{2}$ horsepower from a $4\frac{1}{2}$ by 6-inch motor. It would be preferable to test an old motor rather than a new one, as the chances are much in favor of the old one in showing the higher rating.

IRREGULAR FIRING

Wellington, Kan.—Editor MOTOR AGE—I have a two-cylinder machine, the explosions in which come at irregular intervals—that is, one cylinder will fire, then the other, then there is a pause, then the two explosions are repeated. The points on the commutator are just a quarter of the circle apart, and the exhaust cams are practically set the same. It has suction intake. How can I space the explosions properly? I experimented by setting the commutator points and exhaust

cams exactly opposite, which made one cylinder kick back and do considerable damage.—B.

The cranks on the motor are set at 180 degrees and consequently one piston balances the other. To bring the explosions uniform would require that a new crankshaft, with the throws set together, or at 360 degrees, and a new camshaft. A new timer would also be required. The two pistons traveling together, would have to be counter-balanced. This work would prove expensive and, besides, the motor is better as it is.

FRICITION DRIVE

Rock Island, Ill.—Editor MOTOR AGE—Please inform me through the Readers' Clearing House which of the four types of drive to rear axle gives the greatest efficiency—the single chain, bevel gear and shaft, double side chain or friction. Will the Lambert friction drive deliver more efficiency to the rear wheel than any one of the other types of drive?—Robert Smythe.

The consensus of opinion seems to be decidedly in favor of the bevel gear, with propeller shaft. Any type where lubrication is not possible and the parts are exposed to dirt would not be efficient on the road. MOTOR AGE is not familiar with data regarding efficiency test on the Lambert drive. Correspondence with the maker will probably bring forth the information.

CROSSING CAR TRACKS

Arlington Heights, Mass.—Editor MOTOR AGE—A claims the proper way to drive a car over water bars or tracks is to take them diagonally; B advocates taking them at right angles. Will MOTOR AGE give its views?—M. A. M.

Suppose the obstruction to be 4 inches high and that each wheel carries a quarter of the total load in the car. When ascending the obstruction from a direction at right angles both wheels will strike at once. Upon contact there are two forces in action—one the shock resulting from the impact and the other that lifting the two front wheels, or half the car load, a vertical distance of 4 inches. When taken at an angle the forces are reduced to a quarter of the car load as each wheel strikes. Instead of having the impact and lift take place in a unit of time, they are divided into two parts, taking place in two units of time. The strain on the car would necessarily be just half. The proper angle depends upon the elevation to be passed

over and should be such that the first wheel axis is over the obstruction corner before the second strikes. It is of course understood that the height of the elevation to be taken is within reason. The sane course of reasoning applies to gutters, mud holes or similar depressions. The rate of speed is to be considered in the latter case, for a gutter or hole that would not be felt at 15 miles an hour would be a serious bump at 30 miles an hour. In general it will be decidedly more comfortable for the passengers and better for the car to take obstructions on an angle.

ANTI-FREEZING SOLUTION

Clatonia, Neb.—Editor MOTOR AGE—What salts are used for an anti-freezing solution and how much should be used? How much glycerine would it take to a gallon? Which is the better? Can enough calcium carbide gas be stored in a 2-gallon tank to run a $\frac{1}{2}$ -foot burner 6 hours, and what would be the pressure in the tank? What thickness is required in a round copper tank 2 feet long with the ends dished out?—F. W. Jones.

Glycerine will attack rubber, so it is not advisable to use it in the water circulating system. The expense is also against its use. Use calcium chloride, which can be obtained at a reasonable price if purchased from a wholesale drug house. Get the pure chloride, as many of the cheaper grades contain acid which will attack the metal parts. Pure solutions of calcium chloride have no corrosive action. Pure chloride costs \$16 a ton, but the purchaser probably will not obtain it for less than 4 or 5 cents a pound. Use $4\frac{1}{2}$ pounds to a gallon of water, preferably warm water. Mix and filter before placing in the radiator. Replace evaporation with clean water, and leakage with solution. The gas tanks on the market do not merely contain acetylene under pressure, but the acetylene is dissolved in a liquid called acetone, which has the property of absorbing many times its volume of acetylene gas when it is under pressure. These gas tanks can be bought and can then be recharged for \$2.50. In a home-made tank use a compressor to charge it. This would require an elaborate apparatus and entail some expense. The heads of the tank should be concave instead of convex. The development of the storage tank has taken considerable time, as there are various details too numerous to mention. Unless time is not taken up with other affairs it would not be advisable to start experimenting along this line.

OFF-SET CYLINDERS

Louisville, Ky.—Editor MOTOR AGE—Duryea, Mors, Mercedes and other manufacturers off-set the cylinders from the crank shaft line. MOTOR AGE has already given the result obtained by this construction, but has given no information regarding the amount of offset, the connecting rod length, or the piston length. Will you publish this information in your next issue?—A. V. C.

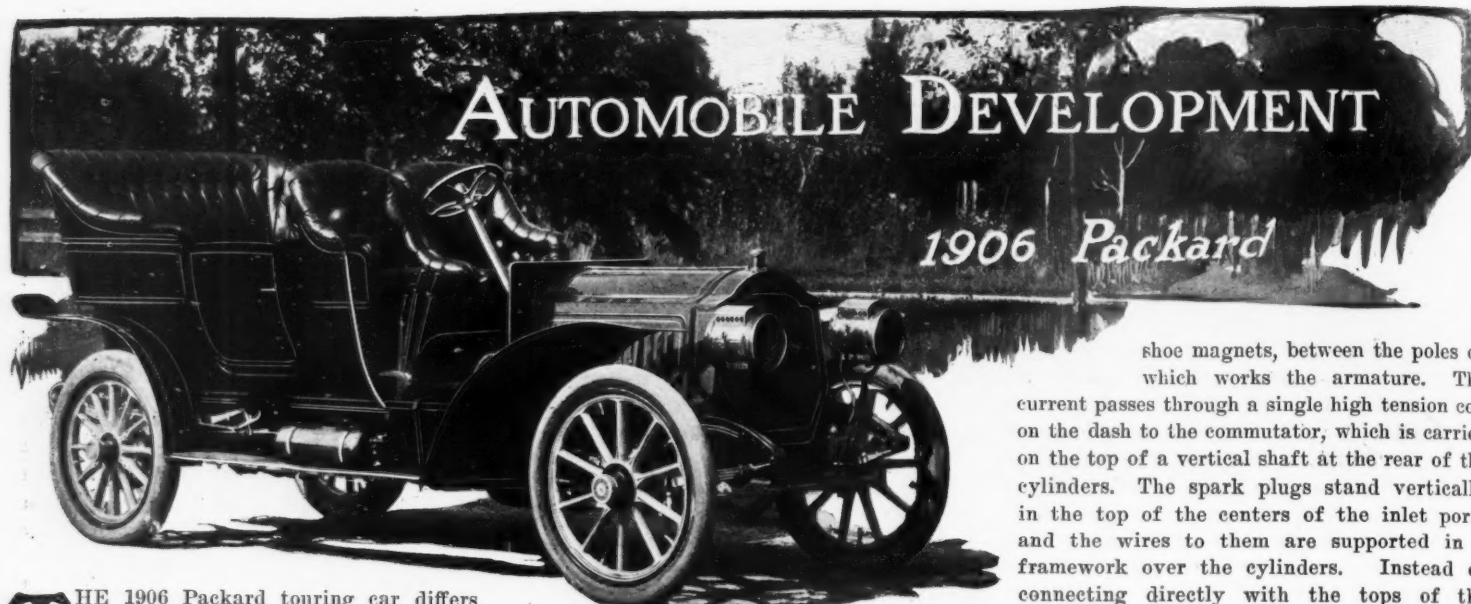
As previously explained, to obtain a short motor the connecting rods are short. This gives a great side thrust on the piston unless a long piston is used. A long piston adds weight, and if the short rod is used the rod strikes the piston. The offset cylinder gives the least angularity on the working stroke, which relieves the piston. If the cylinder bore be represented by D, the piston length by L, the stroke by S, the offset by O, the rod length by RL then $L=1.1D$, $RL=2S$, $O=S/6$.

ANTI-FREEZING SOLUTION

MOTOR AGE recommends the following as the best anti-freezing solution, all things considered: Use $4\frac{1}{2}$ pounds of pure calcium chloride to a gallon of warm water. Mix and filter before placing in radiator or tank. Replace evaporation with clean water and leakage with solution.

AUTOMOBILE DEVELOPMENT

1906 Packard



THE 1906 Packard touring car differs in many details from this season's machine, the motor, spring suspension, ignition, governing of the motor and radiator being in some respects very much altered. The body lines, owing to a longer wheel base, have been slightly changed, but the automobilist will have little difficulty in recognizing conservative lines of the manufacturer not the conservative lines of the manufacturer not finish of each part.

The channel side pieces of the chassis frame have a uniform thickness of 5-16-inch with a depth of $4\frac{3}{4}$ inches. They are made noticeable by the use of Mercedes-like spring hangers at the rear, permitting 56-inch semi-elliptic springs being used, 6 inches longer than in model N, this year's machine. The side pieces are narrowed alongside the motor, where they are 28 inches apart. In the rear they are $33\frac{1}{2}$ inches distant from each other and have a length over all of 151 inches. Each channel cross piece has its ends turned at right angles and the flanges on the frame side pieces are extended at the top and bottom, forming integral gusset plates. Cold riveting is used throughout. Three-point suspension of the frame has been discarded, the favorite cross spring in front now being superseded by a pair of 40-inch, six-leaf springs of the semi-elliptic type swung beneath the frame side pieces. Both front and rear springs are 2 inches wide. The front and rear axles are little changed, the former is a cold-drawn steel tubing dropped in the center with the jaws of the steering knuckles carried on the ends and the rear axle, of similar material, is carried on double and triple ball bearings. Thirty-four-inch wheels in front carry 4-inch tires and the rear wheels are shod with $4\frac{1}{2}$ -inch tires of any standard American make.

The motor rating has been placed at 24 horsepower at the rear wheels, but from 45 to 50 horsepower is claimed at the flywheel. As in model N, the cylinders are cast in pairs, with all parts of each casting integral, but a decided difference in appearance has been given by placing the inlet valves in ports on the right side and having the exhausts carried in similar ports on the left, both sets of valves being on the same side in previous machines. By increasing the bore to $4\frac{1}{2}$ inches and the stroke to $5\frac{1}{2}$ inches the maker claims an increase in power of from 35 to 40 per cent. Placing the valves on both sides of the cylinders necessitates using two cam-

shafts, both of which are carried within the crankcase. The valves follow this year's construction and are removable through screw inspection caps in the top of the ports. The inlet piping from the carburetor to the two pairs of cylinders, as well as the exhaust piping, is an integral tubing, there being only one opening to and from the pairs of cylinders. Each casting is retained through the use of four bolts and nuts, two in each pair of cylinders.

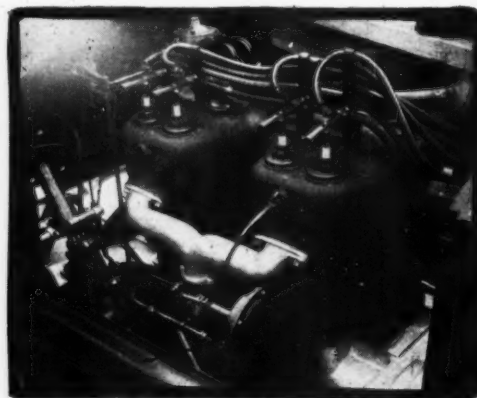
The regular Packard water-jacketed float-feed carburetor is used without alterations except in the control. It is carried close to the cylinders. The control of the throttle is through a diaphragm, which is worked by hydraulic pressure. At the right side of the front pair of cylinders is a disk-shaped body resembling a large rotary pump. Within it is a diaphragm, on one side of which is water pressure created by a gear-driven pump of the circulation system. The opposite side of the diaphragm is interconnected with the throttle-shifting mechanism so that when the motor speeds the pump works faster, more water is forced against the diaphragm, it is forced further in the opposite direction, which movement reduces the throttle opening, thereby reducing the speed. The regular air valve in the carburetor is controlled by a lever on the dash.

For ignition purposes the storage battery has been replaced by an Eiseman magneto, a foreign product. This is bolted to the forward motor support arm on the left side and is chain-driven from a small countershaft which is geared to the left camshaft. The magneto consists of three permanent horse-

shoe magnets, between the poles of which works the armature. The current passes through a single high tension coil on the dash to the commutator, which is carried on the top of a vertical shaft at the rear of the cylinders. The spark plugs stand vertically in the top of the centers of the inlet ports and the wires to them are supported in a framework over the cylinders. Instead of connecting directly with the tops of the plugs they are united through hand switches, so that a plug can be removed from the circuit by the raising of one of the switches. By raising one switch at a time any fault in the firing of one cylinder may be traced. A storage battery is carried for the purpose of starting the motor from the seat and is always in reserve in case of emergency. In the box carrying the coil for the magneto is a single coil with vibrator for the use of the storage battery.

The motor crank shaft is made from nickel steel and is heavier than usual. Four rings are used on the pistons. Splash lubrication is retained; a force feed plunger pump, operated by an eccentric, feeds oil to the crankcase. Two leads go from the pump, one to each half of the crankcase, which is divided between the pairs of cylinders, making it impossible for one pair to get all the oil. The leads from the pump pass through a double sight feed on the dash. The radiator, similar in construction to those of the past, differs in design. Instead of having a straight bottom it is slightly dropped in the center, giving it increased size and altering materially the front view of the machine. The fan is driven by a flat $\frac{3}{4}$ -inch belt from the crankshaft.

The transmission system is little changed. The expanding clutch is worked on the rack and pinion principle as heretofore and from this the drive is through a jointed shaft to the gear case. The face of the gears has been increased and Hess-Bright ball bearings have been installed in place of cone bearings. The sliding gears are on the squared main shaft, on the rear end of which is the bevel driving into the differential. The three forward speeds are 10, 25 and 40 miles and the reverse is slightly lower than the slow speed. The enclosing of the change speed and differential gears in one case and carrying it on the rear axle is a leading Packard characteristic. Four brakes are fitted—two that are lever operated and internal expanding, within drums on the rear hubs, and two with friction bands on the outside of the same drums. The latter are for regular uses only and are applied by pedal. With the application of these brakes the clutch is thrown out and the brakes locked. The clutch is operated by a pedal. Two change speed levers are used; one long lever for the forward speeds and the short one for the reverse, the latter operating when the former is neutral.



THE 1906 PACKARD MOTOR



FRONT VIEW WOODS CAR

The body design follows the general lines of this year's machine, startling curves or oddities not being present. The long wheel-base permits of 22-inch doors to the tonneau and also a distance of 37 inches between the back of the front seats and the front of the rear seat. In the tonneau, and close to the front seat, has been placed a semi-circular locker, the lid of which is upholstered and will seat two people. Another convenience in the tonneau is a brass foot rail for the rear seat passengers. This is supported by pivoted arms at either end and when not needed can be turned back beneath the back seat. The top of the rear seat has a slight backward curve, but the front seat is straight, with the upholstery carried over the top the same as in the rear. Beneath the rear seat is extra carrying space for baggage. The 20-gallon fuel tank reposes beneath the front seat. The upholstery is in Richelieu blue over curled hair backed by spiral springs. The body is finished in standard colors with light running gear.

NOVEL LITTLE CAR

A small front-drive electric automobile that has recently been completed in Chicago will be manufactured in numbers during the coming season. As the illustrations show, the front wheel drive is not the only novelty in connection with it, the individual front and rear seat being something distinctly new as well as novel. The light roadster is called the Interurban and is being made by the F. A. Woods Auto Co., recently incorporated in Chicago.

All the driving features of the car are carried on the front axle, so that behind the steering column the vehicle is as free of machinery as the ordinary horse vehicle. The little machine has neither frame nor reach, the body serving to connect the front and rear axle. The front axle carries all the machinery and drives the car through the front wheels. Steering is accomplished by pivoting the axle, as in the horse vehicles, or by using the ordinary type of steering knuckles. When the axle is pivoted it is steered, from a regulation steering wheel, by having a drum on the bottom of the steering post. Around this drum passes a chain that is connected to the ends of the axle. When steering knuckles are used a worm and segment steering gear is attached to the base of the steering post. The purchaser of a car can buy two front axles, one fitted with a mechanism for driving the car by electricity from storage batteries carried on the machine and the other axle fitted with a two-cycle tan-

dem gasoline motor. In less than 10 minutes one driving axle can be exchanged for the other.

For electric drive, twelve cells of battery are carried, eight cells in a compartment box carried through springs from the rear axle and two cells in cases on each running board at the side. The total weight of the battery is 350 pounds, it contains a 300 ampere-hour charge and is said to carry the little car 150 miles on one charge at 12 miles an hour. The cells measure 12 by 3½ by 6¾ inches in size.

For gasoline drive the power plant is a two-cycle tandem motor, with the cylinders opposed and the pistons working in each, but employing only one connecting rod. The motor is said to weigh 75 pounds and to generate 8 horsepower. It will be water cooled. The vehicle with this drive weighs but 375 pounds but when driven with electricity weighs 650 pounds, the battery causing additional weight.

The body and rear axle are practically a unit, remaining together when the front axle is detached, which can be done in 5 minutes, a kingbolt in the front axle passing through the front part of the body being the uniting part between the two. The body consists primarily of two second-growth ash side boards carried at the rear on short quarter-elliptic springs. The front ends of the springs are fastened to the side boards and the rear ends rest on the back axle. The front of these boards carries the frame work for the bonnet and also the foot-board for the front seat. This end is provided with rollers where it rests on the ends of the pivotal axle so as to make turning easy. Between the side boards is a false bottom for carrying the front rear seats. It is carried on three cross semi-elliptic springs that are shackled to the side boards. The seats are interchangeable, those shown in the illustrations being rattan individual seats held in place by locks and bolts. Both of them can be replaced by double seats and in case of delivery work a small carrying box is made to fasten on in place of the back seat. The wood work is antique oak. The fitting of a long wooden bonnet gives the Interurban a very rakish appearance. Beneath the bonnet is the electric controller and small carrying space. In the front of it is an electric head light, the wires for which are connected with the battery when the bonnet is put in place. A switch for turning on the current is provided.

The car's control rests with a steering wheel



BACK VIEW WOODS CAR

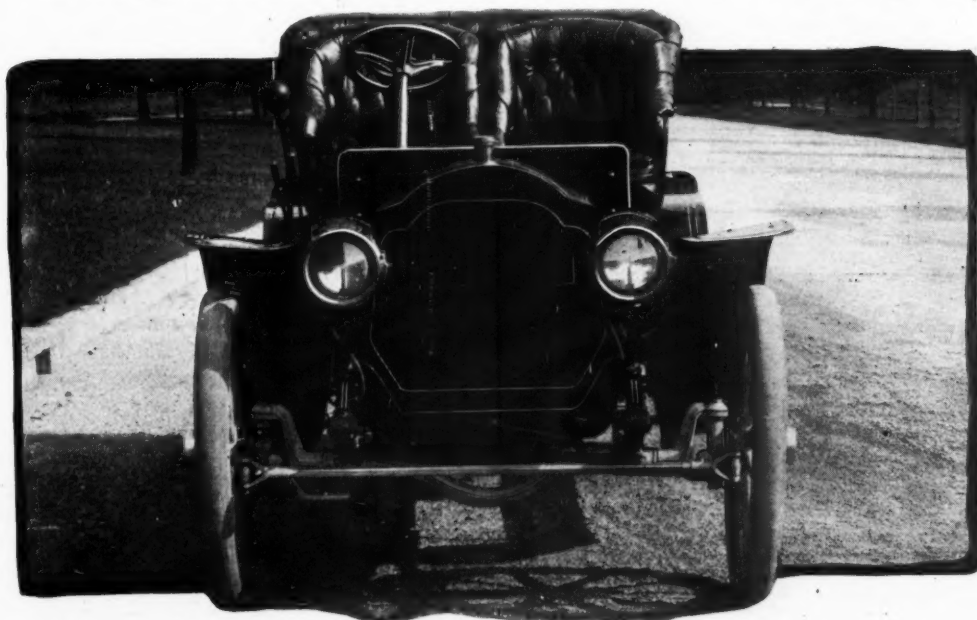
and above it a revolving controller handle. The brakes of the car are supplied by pushing downward on the steering wheel and by means of the wheel all changes of speed are accomplished.

The intention is to put three styles of this car on the 1906 market, a light roadster, shown in the illustrations, a roadster and a delivery wagon. The roadster will be a heavier machine than the light roadster, carrying twenty cells of battery and having a 1-horsepower electric motor and a ¾-horsepower motor will be used on the light roadster. The battery will have 200 ampere-hour capacity. The gasoline axle for this machine will be fitted with a two-cycle tandem motor of 10 horsepower, and the machine will weigh 375 pounds. Seats will be fitted for four persons. The delivery wagon will be the same machine as the one illustrated, being provided with a carrying compartment in place of the rear seat.

The possible speed of these vehicles is interesting, owing to the light weight it is increased. The electric machines are expected to make from 18 to 25 or 30 miles per hour and the gasoline models to go considerably faster.

A SPRING WHEEL

A new design of spring road wheel for use on automobiles has been brought out by James F. de Jarnette, of the Ely Mfg. Co., of Omaha, Neb. The rim of the wheel is of ordinary construction and shod with a flat steel tire. The



AS THE 1906 PACKARD WILL LOOK WHEN APPROACHING

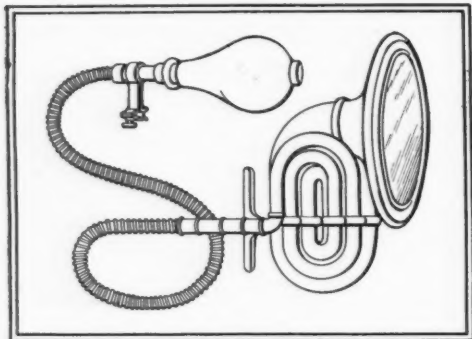
metal hub has five radiating spokes extending towards the rim, but terminating before the rim is reached. Between these false spokes—for they in reality are such—are two coil springs, secured at their inner ends to the hub and at their outer ends to the inside of the felloe. The end of each false spoke is united by a pair of circular metal rings bolted thereto, one on either side of the springs, so that the rings, in reality, hold the coil springs from side movement and so keep the rim of the wheel and the hub in proper relative position. Within the coil springs are short rods, extending from the felloe and also from the hub. These rods are pivoted to brackets on the hub and felloe and give an easy motion to the movement of the spring. The ten coil springs act in unison when carrying a load. The pair of springs directly beneath the hub and between it and the point of contact of the tire with the ground will be compressed and those above the hub at the same time will be slightly stretched, while those to the right and left of the hub will be more or less stretched or compressed, according to their location. As the wheel revolves and other spokes come into line between the hub and the point of contact on the ground they are compressed, while those leaving this position resume their natural condition. By this construction the hub is suspended in the center of a system of ten opposing coil springs, which while the wheel revolves, keeps up a pulling or pushing motion, which always results in a state of equilibrium at the hub. The springs are called upon, when the wheels have to drive the car, to transfer the power from the hub of the wheel to the rim and in this they are assisted by cross bolts between each spring in the rings connecting the ends of the false spokes.

A TRIPLE COIL HORN

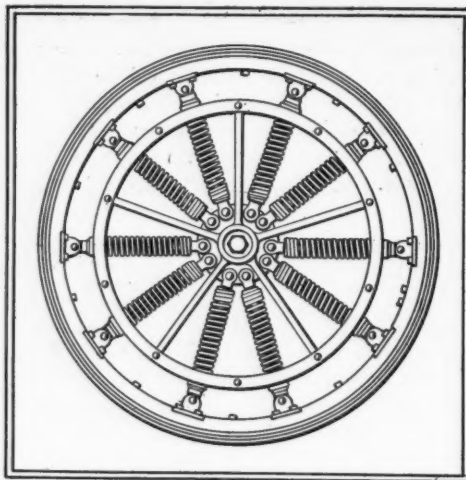
A new French horn, the Blanchard, made with three distinct turns and in several shapes and sizes, has been put on the American market by the Motor Car Equipment Co., 43 Cortlandt street, New York City. The horn, with a wide bugle-like end, is made of heavy spun brass and is especially tempered. Each horn is fitted with a Le Tigre screen over the open end for the exclusion of dirt and other particles. The sound produced is similar to the tones given out by a musical fog horn. Each reed is made in one piece and is adjustable. The reeds can be replaced at a small expense.

VENTILATED CUSHIONS

The Ventilated Cushion Co., 417 Ashland building, Chicago, makes ventilated cushions for automobiles and carriage seats. The skeleton of the cushions is eleven carefully adjusted and evenly balanced vertical coil springs attached at the bottom and top to a wire frame work. This skeleton is covered with canvas and a leather upholstery of any grade and color of leather added. At the back of the cushion



BLANCHARD FRENCH HORN



AN OMAHA SPRING WHEEL

is an air valve that opens to receive air but closes when air is discharged so that the air is forced out through the sixteen small holes in the top of the cushion. The expelling of the air in this way is intended to aid in keeping the cushion as well as the body of the driver cool. The holes in the top of the cushion are where the buttons are attached and ordinarily are covered by the buttons so that dirt cannot enter. All sizes are manufactured.

MOTOR CAR LITERATURE

The Touring Club of Italy, with head offices in Milan, has published a 760-page book of routes through Italy. Few maps are given and the book is printed in Italian.

A few facts and several testimonial letters regarding its tire are published in a small booklet by the St. John Rubber Tire Co., of New York, maker of the St. John non-puncturable solid-cushioned automobile tire.

The Automobile Club of Pittsburg has just issued a neat copy of its constitution and by-laws. In addition to the constitution many illustrations of the club house are given, together with a list of the members of the club.

The Oscar Lear Automobile Co., of Columbus, O., has a book on the recent 728 5-8-mile run made in 45½ hours on the circular track in Columbus. The story of the race is briefly told and the time of each mile given on a full page schedule.

H. H. Franklin Mfg. Co., Syracuse, N. Y., has in circulation advance literature on its 1906 model G touring machine. The pamphlet gives full information on the machine, but illustrations are not included. The completed catalogue will soon be ready.

The September issue of the Automobile Builder contains an interesting four-page article on the use of automobile fire wagons and engines. Tables showing the cost of operation, cost of repairs and replacements and cost compared with horsepower are given.

Niles electric traveling hoists and trolleys, made by the Nipes-Bement-Pond Co., of New York, are well illustrated in a large double sized catalogue. Full page illustrations show each style in actual work and beneath the views are a few features regarding the work of the machines, as well as their construction.

F. H. Wheeler, of Indianapolis, Ind., manufacturer of the Schebler carbureter, has added another catalogue to his list. It contains illustrations and information on the several models made and includes the special carbureter made for the Cadillac. The book contains many letters of reference, in addition to descriptions.

One of the most elaborately prepared cata-

logues of the season is that issued by the Auto Vehicle Co., of Los Angeles, Cal., maker of the Tourist automobiles. Each page is surrounded on three sides with a special landscape design, illustrative of automobile touring. All models made are shown in full-page views and the chassis are also shown.

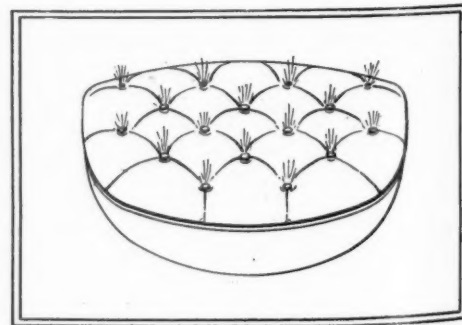
The G & J Tire Manual is a small book on the care and repair of tires. It is circulated by the G & J Tire Co., of Indianapolis, Ind., and shows the construction and methods of repair of its tires. Good features of the book are a table of inflation pressures for different sizes of tires, lists of sundries needed in making repairs, and the G & J tire repair kit illustrations.

White Bulletin No. 10, issued in the interests of the White Sewing Machine Co., of Cleveland, O., contains interesting sketches on summer touring, among which may be noted the Glidden and Chicago-St. Paul tours. Other features of it are an article by Webb Jay on track racing, the use of steam cars in army work and a short story of the 1906 White steamer. The illustrations are in sepia and the printed matter in green.

Charles E. Miller, of New York, has just issued a catalogue of mechanical automobiles and automobile jewelry. The mechanical automobiles are made to represent touring and racing cars of various models, are fitted with extra tires, horns, etc., and are made so that the wheels may be set in any position. In addition they have differential gears, honeycomb radiators, and all the levers usually used on an automobile.

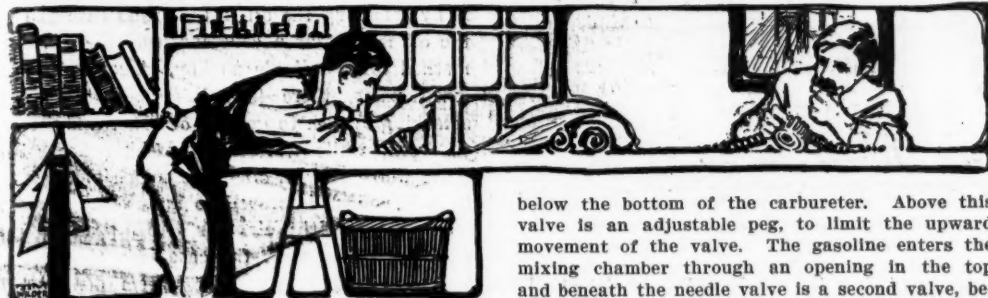
The Winton Motor Carriage Co., of Cleveland, O., has ready information on its model K 1906 touring car. Coupled with the particularly careful mechanical details of the machine is a set of almost a dozen line drawings showing side elevation of chassis, plan view of chassis and sections of front axle, rear axle, engine, crank shaft, gasoline system, spring, transmission, lubrication plant and other interesting details of the machine.

C. S. Mendenhall, of Cincinnati, O., has issued a guide and road map of the state of Pennsylvania, and in addition to it are small corner maps showing, in detail, the Pittsburg district, Erie county, Harrisburg district, Philadelphia district, Scranton and Wilkesbarre district and the Reading district. Main road routes are shown in heavy red lines, good roads in straight black lines and state lines in dots. The front part of the book, containing the map, has 112 road routes printed in concise form. In these routes the places passed through, the distances and the nature of the roads are given. The map is about 3 feet square, but when folded fits within the covers of a regular pocket size book, suitable for touring.



VENTILATED AUTOMOBILE CUSHION

CURRENT AUTOMOBILE PATENTS



LETTERS PATENT No. 800,118, dated September 19; to Hermann Lemp, of Lynn, Mass.—The invention relates to the controlling of the speed of an automobile, in which is carried a gasoline motor which drives an electric generator and the latter provides the current for electric motors on each of the rear road wheels. The method is by raising and lowering the speed of the gasoline motor above and below the critical speed of the generator without disturbing any of the electrical connections. By this method the car can be started and stopped with ease and precision.

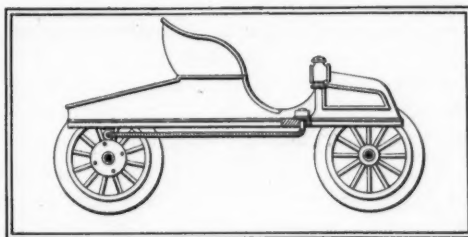
Letters patent No. 800,046, dated September 19; to Nathaniel Young, Newmarket, N. H.—The device is a speed indicator for automobiles which is fastened to the rear axle, if a live one, or to the rear road wheel. Around the axle is a stationary sleeve and around the stationary sleeve is another sleeve slidable longitudinally. In the stationary sleeve is a stud with an opening in the axis and in this opening is a spiral groove which engages with the stud, which rotates a barrel within it. Attached to the axle are governor weights which move the slidable sleeve, which, when it moves, operates on the barrel and, being connected with a dial needle, the speed is shown.

Letters patent No. 799,851, dated September 19; to Ralph O. Hood, of Danvers, Mass.—The motor vehicle described uses a gasoline motor carried vertically in front. The crankshaft of this motor connects with the cardan shaft to the center of the rear axle through a friction clutch. Directly above the clutch is an electric motor with its armature shaft geared directly to a loose member surrounding the clutch, there being provision to lock the part to which the electric motor is geared rigidly to the transmission shaft. The object of the electric motor is in case the gasoline one does not give sufficient power the electric one can be coupled in. The electric motor is supplied with current from a storage battery.

Letters patent No. 799,638, dated September 19; to Alfred Ducasble, of Neuilly, France—The automobile tire of the inventor consists of a dozen separate portions, each containing an air chamber with openings connecting with the atmosphere air. In the tread of the tires, between the sections, are cross grooves to prevent slipping. The tire sections are held in place by rings on each side of them, the rings being bolted to the felloe of the wheel.

Letters patent No. 799,791, dated September 19; to Frank I. Hitchcock, of Bridgeport, Conn.—In the inventor's carbureter the air enters through a pipe at the left end into an air chamber in the bottom of the body part of the carbureter. Above the air chamber is a mixing chamber, the passage of air through the partition being past a vertical poppet valve with a long stem extending

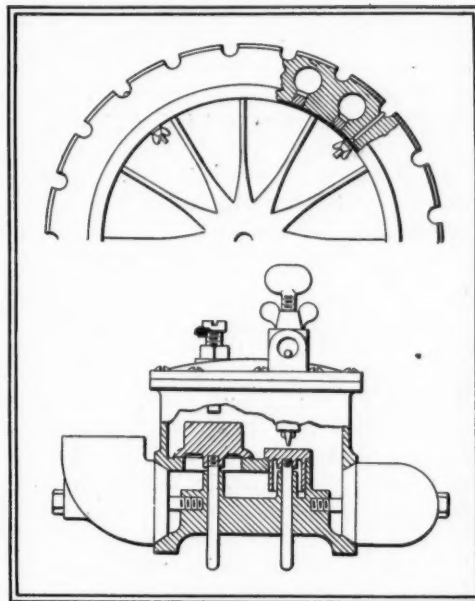
below the bottom of the carbureter. Above this valve is an adjustable peg, to limit the upward movement of the valve. The gasoline enters the mixing chamber through an opening in the top and beneath the needle valve is a second valve, between the air and mixing chambers. This second valve when opened hits on the bottom of the



YOUNG'S INDICATOR

needle valve, opening it. The greater the motor speed the greater will be the amount of opening of the valve and the higher will the needle valve be raised. The outlet to the motor is at the right end. Priming arrangements are not shown.

DUSCASBLE'S TIRE



HITCHCOCK'S CARBURETER

Letters patent No. 799,780, dated September 19; to Joseph Le Conte Davis, of Schenectady, N. Y.—The invention, in an automobile, deals with the use of electric motors instead of a transmission gear in gaining changes of speed. The

gasoline motor is placed vertically in front and drives through a differential. Dynamo electric machines are connected to the ends of the jack-shaft, and the control of these machines so arranged that the speed can be varied at will. The electric motors are supplied with current furnished by a generator, which is driven from the gasoline engine.

Letters patent No. 799,788, dated September 19; to Otto Cullman, of Chicago—The differential gear, referred to, has a two-part casing, with annular recesses on the inner faces of each, which form the bearings for the pinions in the gear. The axle-gear wheels are respectively journaled in the parts of the casing and the pinions journaled in the annular recesses to intermesh with the axle-gears.

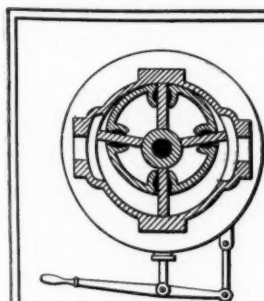
Letters patent No. 799,703, dated September 19; to Charles O. Barnes, of Oswego, N. Y.—The inventor has a new form of steering gear for automobiles. On the bottom of the steering column is a screw and enclosing the screw part of the column is a two-part nut, the parts divided vertically and each half having a trunnion. Against the lower side of one trunnion bears an arm and a similar arm rests on the top part of the other trunnion. These arms are connected with a sleeve on a shaft and from the sleeve is a downwardly projecting arm for coupling with the rod connecting to the steering knuckles.

Letters patent No. 799,662, dated September 19; to Benjamin Nathan, of New York, N. Y.—The device is a cover for pneumatic automobile tires to be used when the tires are carried on the side of the car body. The cover buckles in place about the tire and the overlapping edges are so made as to be water proof.

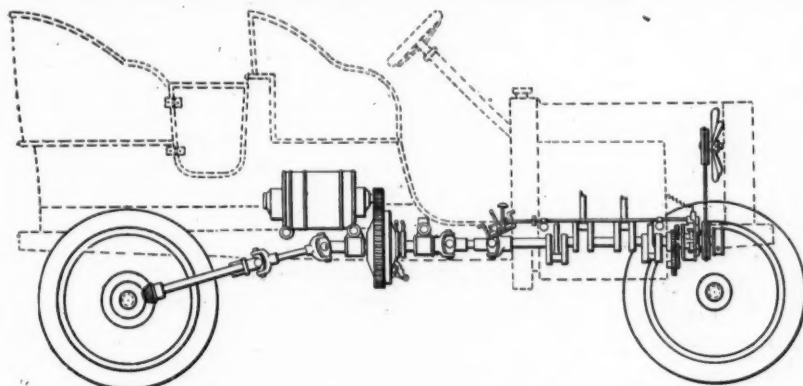
Letters patent No. 800,023, dated September 19; to William S. Sharpneck, of Chicago—The rotary pump described is of the eccentric variety. Within a circular casing is a rotating shaft carrying four plunger pistons. At the outer end of the pistons is a drum for holding them in place. The outer ends of the pistons co-act with the inner walls of the casing, the piston ends always being against the casing, but the drum only touching it at one place at a time, leaving a crescent-shaped water space between the casing walls and the drum. The incoming water enters at one side and the exit is diametrically opposite.

Letters patent No. 799,859, dated September 19; to Frank A. Magowan, of Trenton, N. J.—The automobile tire referred to consists of an air tight rubber tubing in which is placed great numbers of hollow rubber balls, each filled with gas in a high state of compression. The bullets, or rubber balls, are small compared with the diameter of the tire, and when put in are compressed so that their diameter is several times less than if they were under atmospheric pressure. The balls arrange themselves within the tube in symmetrical form. The object of the tire is that in case of one ball being punctured the others immediately fill the space occupied by it and the use of the tire is not interfered with.

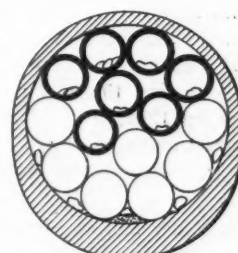
Letters patent No. 796,937, dated August 8; to William H. and Harry T. Coldwell, of Newburgh, N. Y.—The invention deals with the oiling of a differential gear in automobiles. The differential shaft is hollow for the carrying and conveying of oil to the bearings and gears. On the shaft is a spider with oil ways and arms, the differential gears being on the arms. The oilways in the spider connect with the interior of the hollow shaft and from the spider oilways are others for conducting the oil to the bearings and also to the casing of the differential gearing.



SHARPNECK'S PUMP



HOOD'S DRIVING SCHEME



MAGOWAN'S TIRE

ROADSIDE TROUBLES

An Ounce of Prevention

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By Chas. E. Duryea



THE MIXTURE—Next to ignition the mixture should be considered, for unless gasoline and air in somewhat proper proportions get into the motor, running is impossible. Most carbureters now use a float to maintain a constant level of gasoline in a small chamber from which it is drawn by the in-going air, which atomizes it and carries it partly as spray and partly as vapor into the cylinder. A carbureter that makes a fine spray must have small openings and consequently does not fill so completely the vacuum in the cylinder as does one having larger openings and less complete atomization. Here the method of sparking has a decided bearing, for with a large spark a less homogeneous mixture will ignite, thus getting power out of a motor, which, with a small spark, would misfire or else require a more perfect mixture. Failure of the carbureter is usually caused by the gasoline passages becoming stopped, by failure of the float to perform its function, by presence of water instead of gasoline or by stoppage of the air supply, or admission of air at some improper place. If the float chamber has a means of opening at the bottom, the test for water is easily made. The float should be examined to see if free to rise and fall and not filled with liquid, as leaky floats are frequently found. The other possible troubles are quite remote and therefore seldom found. Every carbureter should be protected by a gauze or chamois skin against both dirt and water, which protection will usually stop trouble from this source and save the operator many moments of suspense.

VALVE MOVEMENT—In connection with proper mixture, proper valve movement, both of inlet and exhaust, is necessary, and many engines are giving little satisfaction because of exhaust valves that close or open at the wrong time. The exhaust valve should open 15 or 20 degrees before the dead center is reached and should close just at, or very slightly after, the next dead center. The exhaust valve spring must be stiff enough to prevent the valve being sucked to open on the suction stroke. The inlet valve should be light and its spring should be as light as possible to permit the valve to open freely and admit a large charge, yet strong enough to close quickly before the piston drives any of the charge out through it. The inlet valve should ordinarily make short lifts, depending upon its large size for admission of proper quantity of charge instead of on its high lift. With multiple cylinder motors inspection of one that is working properly will usually show what is wrong with one not so working and thus assist the novice to get acquainted with proper conditions. The multiple cylinder motor is seldom incapacitated by one cylinder going wrong and

generally has sufficient power to propel the vehicle with the remaining cylinders. The user is therefore usually able to get home even with one faulty cylinder and because of this fact, the complication is advantageous rather than otherwise. No makers having adopted multiple cylinder motors have dropped back to single ones, which in itself is strong evidence in favor of the multiple design.

LUBRICATION—Probably nothing is of more importance about a motor vehicle than proper lubrication. Many a good vehicle has been condemned because not properly cared for in this respect. A dry bearing will often prevent proper working and thus either stop the vehicle entirely or interfere with its service seriously, even if no damage needing repairs is caused. As a general rule, every moving part should be oiled to lessen the friction of movement; but when it should be oiled, how much oil and what kind of oil are questions demanding individual answers, and information on this point must be sought either by addressing the manufacturers or someone well informed, or by securing a thorough knowledge of the vehicle. To many people all oils look alike, but there is as great a difference between oils as between automobiles and the good oil is always the cheapest, although the highest priced oils are not always the best.

COMPARISON OF OILS—As a comparison of lubricating qualities, the writer drove nearly 700 miles on a gallon of suitable cylinder oil, then used 1½ gallons of lower grade to drive 150 miles with constant watching required to avoid dry pistons. The former oil at \$1 per gallon is readily seen to have been much cheaper than the other at 30 cents. Generally speaking, an oil should be as thin as possible, as long as it has proper body to support the running parts and a proper fire test to not smoke under the heat to which it is exposed. Needless thick oil adds needless friction, but in order to secure a high fire test for cylinder use, a thick oil is usually necessary and this not only remains in place, perfectly lubricating the piston and cylinder, but it makes a splendid packing and thus avoids leakage with consequent increase of power in the motor. The appearance of an oil when cold is not a correct guide as to its behavior when hot, which can only be told by testing. A tallow candle, for example, melts at a low temperature and vaporizes easily and is therefore not a suitable lubricant for hot bearings, whereas a high fire test cylinder oil not only resists burning at high temperatures, but also resists solidifying when cold.

OIL LITTLE BUT REGULARLY—The amount of oil used is not so important as the ready and steady application of it, so that any sys-

EDITOR'S NOTE—This is the tenth of a series of articles by Charles E. Duryea. These articles will be prepared for publication in book form and will be distributed by the American Motor League to its members during the coming year.

tem of lubrication should be based on this fact. For motor lubrication a most common means is by splashing the oil in the crank case and if the oil is kept at a constant level therein, this method is as reliable as any, since having no extra parts, there is nothing about the oil splashing system to get out of order and refuse to work, while a liberal splashing keeps all parts well wet with oil. The splash system can be modified or improved to meet special needs by collectors with guides or drip pipes to carry oil, splashed against the case into the proper bearings, thus making the system deposit oil where needed and in proper proportion. This control of the oiling is the feature sought for in sight feed or mechanical systems, which are undoubtedly good, but add more or less undesirable complication.

SIMPLE OILING DEVICES—For parts outside the motor where the splash lubrication is not feasible several methods are used. Either the various bearings are provided with separate oil cups which may be sight fed or not; or they are fed by pipes from a central reservoir, each adjustable to give the proper amount; or in some instances, oilless bearings fitted with graphite plugs are used, which do not require lubrication. Whatever system is used, learn as early as possible its peculiarities and thus be in position to detect any failure to operate properly before damage is done by cutting out a bearing and possibly doing greater damage. If a choice of oil cups is permitted, preference should be given to the least complicated forms, for while glass cups, sight feeds and similar conveniences look well and frequently act well, they also frequently give trouble from broken glasses, leaky packings and similar nuisances. The behavior of an oil cup depends very largely upon what it was designed for and the manufacturer should not be blamed if a cup refuses to feed or feeds improperly, an oil for which it is not made or adjusted. Some cups, for example, work well on thin oil if cold but will not work on hot oil of the same thinness because the cork washers or similar packings are burned out or destroyed by the heat. Other oil cups intended to operate under the influence of heat and pressure may utterly refuse when placed beyond the influence of the assisting causes of action. It is generally safe to assume that the manufacturer knows his business and avoid making changes in the location of oiling devices without either a long experience or consultation with the maker.

WEATHER EFFECTS—Since temperature causes oils to behave differently, it is quite evident that different lubrication results may be expected from oil cups exposed to the heat of summer and cold of winter unless different oils are used, suitable for their seasons. Since the temperature, near the engine, is much the same the year around, oil cups to use the same grade of oil in all seasons should be placed near the motor, where they may receive the benefit of this constant temperature, but if placed away from the motor and exposed to the outer air, a change either in the quality of the oil or in the adjustment of the cup must necessarily be made with each considerable change of temperature. The design of a vehicle has much to do with the lubrication problem and some vehicles have many less oil cups than others equally capable. Preference should, of course, be given to the simpler form as being the one least likely to give trouble. If an oil cup is found empty on the road without a reserve supply from which to fill it, there will usually be found some other oil cup containing

enough to be divided, thus enabling one to proceed till a supply can be obtained.

Steam engines can be found in most parts of the country and where the regular oil cannot be obtained, usually that used for steam engines will serve. Even a poor oil is usually better than none.

GRAPHITE—Graphite is a splendid lubricant and almost impossible to wear out. The great difficulty, however, is to keep it in place on the bearing. If used in connection with oil, it should be used sparingly, for a thick paste of graphite and oil refuses to spread evenly over the bearing and will permit one part to get dry and cut, although another part nearby may be kept in good condition. If used on roller or ball bearings nothing is better than a paste of graphite and grease. For making this paste vaseline is frequently used, but its lubricating qualities are not so satisfactory as the regular greases prepared for lubrication purposes; the nature of the vaseline causing it to wear out more easily, while it is not of high fire test and not adapted to stand much heat. Dry graphite alone is hardly safe as a lubricant for plain bearings, because of the difficulty of keeping it in position where needed,

but if fed constantly in small quantities it serves well; in fact, as stated at the beginning, constant feeding of any lubricant decreases the quantity required and secures by far the best results. A drop of oil in the right place is far better than a gallon on the ground. Care, therefore, should be taken when oiling with the ordinary squirt can to see that the oil reaches the place for which it is intended and avoid as far as possible spilling it all over the other parts of the vehicle where it simply gathers dust and cannot possibly do any good, but disfigures and injures the surface.

LOST POWER—The need of lubrication becomes most apparent in its absence and while sometimes a warning squeak gives evidence of lack of oil, many times the first warning is a decrease in power, followed almost immediately by a sudden stop. In this event, disconnect the clutches and see that the vehicle bearings are all right by pushing the vehicle back or forth. An operator should frequently test his vehicle by pushing it, so as to know if it is running properly and this test will show quite fairly the condition of the bearings, brakes and clutches. If the vehicle is all right then test the motor by turning it with compression

relieved, noting the regularity of the power.

SEIZED BEARING—If stuck tight, so that it cannot be turned, take hold of the fly wheel and apply power in the reverse direction, pushing backward on the fly wheel and then forward with the crank. If a stuck piston, it will be possible to find whether the crank shaft moves even a little, as permitted by the slight looseness in the bearings. If the crank does not move at all it is probably a crank bearing and inspection or loosening will remedy the trouble so as to permit the shaft to be moved. If a stuck piston, it will usually cool down enough to be movable, but oil should be worked into the damaged place as quickly as possible, and any metal particles should be removed with waste. If on the crank shaft, frequently rough spots are found and they should be removed with chisel or file, so as to prevent further damage being done by the presence of cut-off particles.

INSPECTION—In each instance the principal difficulty is to find where the trouble is rather than to remedy it afterward, and an ounce of prevention is better than a pound of cure, so frequently and carefully inspect and know that the parts are always properly lubricated.

COMPRESSION COMBUSTION

The subject of compression, and its relation to volume and temperature, has been of such frequent occurrence in the Clearing House columns that Motor Age believes a few words on the subject will be acceptable to the readers. Compression as considered in gas engine work is this: A certain volume of mixture is caused to occupy a much smaller volume. This results in an increase in pressure and gives rise to an increase in temperature. Compression requires work to be performed; this work is converted into heat and the energy of the air, due to its now being under pressure. If the gas under compression is permitted to cool to atmospheric temperature there is a loss in pressure and also a loss of the heat dissipated by radiation. If the compressed gas at atmospheric temperature should be allowed to escape it would result in a reduction in the temperature of the containing vessel, below atmospheric. Compression produces heat and expansion absorbs heat. From the foregoing, and appreciating the fact that heating a gas expands it and also produces a rise of pressure, it is known that to have a vessel hold a pressure of 150 pounds for several weeks, it is necessary to have the pressure at the end of charging very much higher, because when the heat of compression is lost the gas will contract and occupy a lesser volume, which, of course, means a lowering of the pressure within the vessel.

Compression in which all the compression heat is retained in the gas is termed adiabatic compression. When the heat is removed as fast as produced the compression is said to be isothermal. Pressures and temperatures are always considered absolute. Absolute pressure is that registered by the gauge plus 14.7 pounds, or that of the atmosphere. Absolute temperature is the temperature of 460.66 degrees Fahrenheit below zero. Thermometer readings and gauge readings must have 461 and 14.7 added to them, respectively, to reduce to absolute values.

If the volume of a gas remains constant

and heat be added, the pressure rise is proportional to the absolute temperature rise. When the temperature remains a constant, the volume varies inversely as the pressure. If the pressure is constant, the volume is proportional to the absolute temperature. Below is given a table which considers the ordinary motor compressions. Pressures are given in gauge pressure and the temperature as that of the Fahrenheit thermometer and not absolute temperature. In gas engine work the compression is considered to be adiabatic. In designing a motor for 95 pounds compression, refer to the adiabatic volume table, which gives .24 as the volume after compression. Suppose the piston displacement to be 150 cubic inches. The total volume of the cylinder will be 150 plus the clearance. This volume is then compressed into the clearance space.

So the clearance volume for a displacement of 150 cubic inches must be 47½ cubic inches if 95 pounds gauge pressure is desired. By the use of the following table clearance volumes for a motor of any piston displacement to have desired compression, may be obtained.

Gauge pressure	Volume— Compressed Isother- mally	Volume— Compressed adiabat- ically	Temp'ture— Compressed adiabat- ically
55	.21	.331	357°
60	.197	.315	374
65	.184	.3	389
70	.173	.288	405
75	.164	.277	420
80	.155	.267	433
85	.147	.251	447
90	.14	.248	459
95	.134	.24	472
100	.128	.232	485
105	.123	.225	496

In the gas engine energy is obtained from the combustion of carbon and hydrogen in oxygen. The two former elements are in the fuel used and the oxygen is obtained from the air. Technically, combustion is a rapid oxidation resulting in the liberation of light and heat. Incomplete combustion is when the carbon and oxygen unite and form a compound

which is still combustible. In the gasoline engine the incomplete combustion forms from the carbon of the fuel, an oxide of carbon called carbon monoxide CO. Carbon monoxide can be converted into carbon dioxide—CO₂—by additional heat in the presence of oxygen. In other words, this is the case when the mixture is too rich and there is not sufficient oxygen. Obviously there is a decided energy loss where combustion is incomplete.

Flame is produced by solid particles of carbon heated to such a degree as to be luminous. Were it not for these particles becoming incandescent, the generation of heat energy would be entirely invisible. Incandescence, in its true sense, means a certain heat condition which produces, or is associated with, a light effect without a chemical change. Generally it is assumed to also mean the condition which includes a chemical change and great intensity of heat. Ignition is production of the change in the state of the gases which effects combustion. If the mixture is right the ignition takes place and propagates itself throughout the entire volume practically instantaneously, the rate of propagation depending upon the mixture proportions, its susceptibility to chemical change, the compression and the magnitude of the ignition flame.

An explosion is very rapid combustion, assumed to be instantaneous. Certain explosives are said to detonate. Detonation is the combustion of elements produced without flame, by concussion or vibration. Nitroglycerine detonates very readily, producing explosion. Compressed gas and air will not detonate by concussion, but will explode if a flame be produced in a proper mixture of the gas and air.

Spontaneous combustion is due to the fact that a porous substance absorbs oxygen to such an extent that its temperature is raised to the point where a flame is produced. To produce spontaneous combustion it is necessary that some substance such as oil, which oxidizes readily, be finely distributed over a large surface. This gives an excess of oxygen, which produces heat. When this heat is carried away as rapidly as produced inflammation will not occur.

FROM THE FOUR WINDS



LEADER IN CHICAGO MARATHON RACE FOLLOWED BY AUTOMOBILES

Dayton Club to Quit—Owing to the laxity of interest and non-support by the members, the Dayton Automobile Club, of Dayton, O., has closed its rooms and will sell its property at auction next month. It is announced the club will disband November 1.

McHenry County Again—Not satisfied with several successful tours and a hill climb, the McHenry County Automobile Club, an Illinois organization, is planning an endurance run for a cup offered by President A. J. Olsen. The route will be from Woodstock, Ill., to Milwaukee, Wis., by way of Kenosha and Waukegan, returning to Woodstock by way of Elgin.

Bisons to See Race—Several parties of Buffalo motorists are being formed for the purpose of touring to Long Island in October for the Vanderbilt cup race. Still other enthusiasts are making up a party to go in a special Pullman car which they intend to have switched to a point near enough to the course to enable them to eat and sleep in it, thus avoiding the rush for accommodations in the hotels near the course.

More Footpads—Two masked bandits attempted to hold up an automobile party at the foot of Hubbard hill in Winnetka, Ill., last Friday night at the scene of the successful holdup of F. C. Woodruff July 30. F. H. Holbarth, of Waukegan, was running the car and had with him his wife and Mrs. Cecil Yates and her 10-year-old daughter. Holbarth took a chance and refused to stop, whereupon the bandits opened fire, but the bullets all missed their mark.

No Longer Ohio's Mud Hole—Within the last decade Wood county, O., has expended over \$2,000,000 in improving its highways, and today there are 550 miles of good roads traversing what was once known as the greatest mudhole of Ohio. By the first of the year the county will have almost 625 miles of good macadam roads, as nearly 75 miles of roadway are under improvement. The county is rich in petroleum, and there is no other county in the state, outside of those containing large cities like Cleveland, Cincinnati, Toledo and Columbus, where there has been so much money spent for the improvement of highways. It has cost the

county \$3,500 on an average for every mile of road that has been stoned. It is expected that within the next 10 years the county will complete the work entirely of improving every mile within the limits of the county.

Long Drive by Westerners—Ed H. Witte and wife and Carrie and Julia Benz, have just finished a tour through Kansas and Colorado, covering 2,643 miles. The return home from Denver to Kansas City, 858 miles, was made in 50 hours on a consumption of 81 gallons of gasoline averaging 19¼ cents.

Risks Life on Bridge—John Kennedy, of Laredo, Tex., is reported to have driven an automobile at a high rate of speed over the Mexican National Railroad bridge over the Rio Grande. The bridge is about 800 feet long and 30 feet above the water. There was barely room for the wheels between the rails and Kennedy took chances of meeting a train while on the bridge.

Empire State Wakes Up—State Highway Commissioner Hunt, of New York, is inspecting the roads between Glenburn and Great Bend, Susquehanna county. Pennsylvania has just completed a road from Scranton to Glenburn and the plan is to have the state of New York provide an improved highway from Glenburn to Great Bend to connect with the New York state road and be a part of the national highway from Chicago to New York.

Wise Liveryman—John W. Cronin recently made an address at the Syracuse Carriage & Liverymen's Association's clambake, in which he showed that he was fully up to date on the subject of automobiles. Mr. Cronin not long since opened up a garage in connection with his livery business and is now doing a rushing automobile business. "Gentlemen," said Mr. Cronin, "I see your finish unless you get in line with the progress of the age. By the time the horses you now own are dead there will be no use for any more and you will all have automobiles to rent. I am sorry to see my old friend, the horse, sent to the scrap heap, but there is no other way. Automobiles for pleasure, automobiles for business, and there you are. What is left for the horse? In a short time you will have to replace your oat bins with gaso-

line tanks and the smell of scorched oil and the gasoline will succeed the atmosphere of ammonia."

Valuations Higher—Acting on the returns by the counties of the state of Minnesota the board of equalization has raised the valuations 200 per cent in some counties, while a few escaped with less than a 10 per cent increase. The total number of cars reported was 1,138, as compared with 696 in 1904. The total valuation was \$429,065.

Proposes Big Test—The Automobile Club of France is reported to be considering the advisability of promoting an international reliability trial next spring. The route proposed is from Paris to Nice, then along the Riviera to northern Italy and continuing along the river Po to Venice and Vienna, then on to Berlin and passing through Germany by way of Dusseldorf to Holland, returning through Belgium to Paris.

Club in Washington—A permanent organization of the Washington Automobile Club was perfected during the past week, when the following officers were elected: President, W. S. Duvall; vice-president, C. E. Wood; secretary, Leroy Mark; treasurer, H. B. Willson; captain, R. B. Caverly; lieutenant, F. H. Edmonds; board of governors, Burr N. Edwards, F. B. Pyle, F. R. Gordon and F. H. Edmonds. The club has a charter membership of sixty and is well fixed financially. The club has secured quarters at a road house a few miles out of Washington.

Even in South Africa—The automobile has invaded Basutoland, Africa, the first car to enter the country being a 6-cylinder Napier. The car forded the Caledon river at Hanger's Drift, which was successfully negotiated, though the water was up to the hubs, and there was a current running 8 miles an hour. It is stated the owner of this car experienced considerable difficulty in getting out of some of the steep drifts, and his experience induced him to invent a contrivance to prevent a stoppage of gasoline through the tank getting lower than the carbureter.

Reckless Driver Pays—By firmly backing the claim of Otto Hagelin, a repair man, in his effort to collect damages from a reckless driver who tore a front wheel from a little runabout on Labor day the Automobile Club of Buffalo has enabled Hagelin to get his money. The big car never stopped at the time of the accident and Secretary Dai H. Lewis, who witnessed the accident, thought it an excellent chance for the club to prove that it was not at all in favor of such dangerous driving. Hagelin's first demand for remuneration was denied, but when Secretary Lewis took up the matter the owner of the big car paid promptly.

Motor Boat Race Farce—Mail advices from London tell how farcical the motor boat race for the Harmsworth cup was. Mab, a boat constructed in France but owned by an Englishman, was entered at the last moment to give some semblance of internationalism to the event. The race was confined entirely to the two Napier boats, Brooke being forced to retire early, owing to abnormal overheating of her bearings, and although Mab finished the race she had a long stop in the middle to effect repairs, which put her entirely out of the running. Napier II had to run on one bearing for about ½ mile in order to make an adjustment. During this

time Napier got ahead, but later the Yar-row craft ran under full power, gradually overhauled her rival and finished first.

Motorist a Target—Because his horse became frightened at the automobile driven by Frank Trego, a mine owner of Plattville, Wis., a farmer, said to be a wealthy man living near Darlington, Wis., climbed out of his rig, pulled a revolver and fired at the motorist, the bullet piercing the latter's hat.

Lunatic Is Licensed—The crusade being made on the method in vogue in the United Kingdom in licensing automobile drivers has led to proof being produced showing that the government recently issued a license to a lunatic in the Leavesdon asylum, near King's Langley, Herts. One English critic claims it is a demonstration of the absurdity of the law which lets any one who pays 5 shillings jump in a car and drive it.

Fights for No. 1—A. E. Paegel, of Minneapolis, was the first man to pass the examination set by the board of examiners of his home city and naturally he thinks he is entitled to automobile license No. 1. City Clerk Lydiard, however, has seen fit to give the coveted tag to a friend of his who has yet to take the examination. Paegel refused to take No. 2 and in consequence there is a deadlock. The board ruled that it will not issue automobile licenses to people who have had epileptic fits.

A. C. A. Show Sanctioned—In order to avoid embarrassing several of its prominent exhibitors in relation to shows in other cities, the Automobile Club of America has applied for and obtained from the N. A. A. M. a sanction for its sixth annual exhibition. Since the sanction did not interfere in any manner with the open character of the automobile club show, its exhibition committee, having in view the general good of the industry, decided that it would be unfair to N. A. A. M. members to ask them to place themselves in bad standing with their own organization.

To Improve Ohio Roads—At a preliminary meeting held at the office of Mayor Robert H. Finch, of Toledo, O., Wellington Loucks outlined plans for the improvement of highways in that section. The main thoroughfares west and south of Toledo will stand very little criticism, but between Toledo and Cleveland the roadways present an altogether different aspect. Many automobilists coming from the west stop at Toledo, load their machines onto a lake boat and do not resume touring until they reach Cleveland. A special convention of all those interested in bettering the highways in northern Ohio will be held at Toledo within a month.

Motor Cars In Marathon—Automobiles played an important part in the running of the first Marathon race ever contested in Chicago, promoted last Saturday by the New Illinois Athletic Club. Eighteen runners started, each one of them being accompanied by an automobile in which were the attendants and club officials. The course was 25 miles long, finishing at the Washington Park race track. Rhud Metzner, of the New Illinois Athletic Club, won, only seven men finishing. Louis Marks, after leading most of the way, collapsed. It is a question which attracted the most attention—the runners or the automobiles. In addition to the cars for each contestant, many curious motorists followed the race, while the Chicago Daily News

was enterprising enough to furnish its reporters and photographers a big Thomas touring car in which to pick up the facts.

Concession by Roosevelt—President Roosevelt has steadfastly refused to permit an automobile to enter the grounds surrounding his home at Oyster Bay, but the other day he relented when the Duchess of Marlborough, driven in Clarence W. Mackay's automobile, called on him at Sagamore Hill.

Map That's Needed—The Cleveland Automobile Club, through its secretary, Charles Marvin, is getting out a road map, showing all the highways and their condition in the Cleveland district. In this connection he has made application to the county commissioners to repair and set up guide posts throughout this county. He stated that there were practically no guide posts in the county and that it is impossible for a stranger to know what road he is on. This renders maps and guide posts almost useless. He says there should be a sign at every crossing, giving the names of country roads as well as the distances to nearest towns.

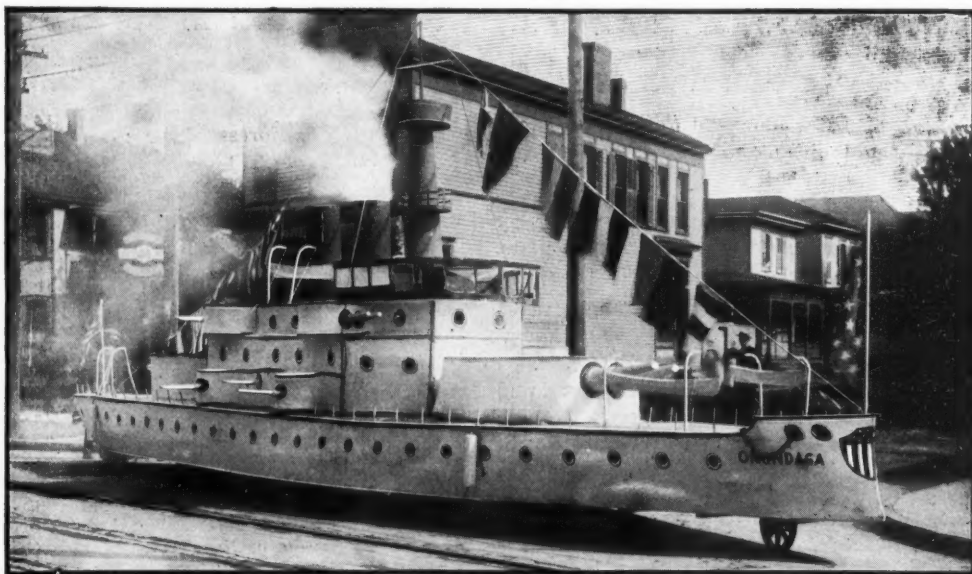
Now Established—The much-discussed automobile line between Philadelphia and Atlantic City seems to be in a fair way of becoming a reality. A test last Friday of the possibilities of the scheme resulted satisfactorily, it is said, to all concerned. This trial was made under the direction of William J. Ryan, a well-known Quaker City ticket broker, the car, which has seating capacity for sixteen passengers, being furnished by the Mack Motor Car Co., of Allentown, Pa. The vehicle weighs about 7,600 pounds and its motor can develop 60 horsepower. Besides accommodations for travelers, there is a boot for the stowing away of the passengers' luggage. The trial trip started from the Bellevue-Stratford at 9:30 Friday morning, the passengers being made up in large part of representatives of the Philadelphia papers. No speeding was attempted, although the car is said to be equal to 30 miles an hour. Frequent stops were made at all the towns and villages along the route. Atlantic City was reached shortly before 3 o'clock in the afternoon, not the slightest accident or breakdown having occurred to mar the trip. Mr. Ryan, who is the promoter of the enterprise, announces that the car will leave the Bellevue-Stratford, Philadelphia, every Tues-

day, Thursday and Saturday mornings, the Atlantic City headquarters being the Hotel Chalfonte, whence the car will depart every Monday, Wednesday and Friday morning on its return trips.

South African Test—The Transvaal Automobile Club, a South African organization, recently held an endurance test over 210 miles of road that in many places was covered with 9 inches of sand, while streams with water in places a foot deep had to be crossed. The course was from Johannesburg to Schoeman's Drift, via Potchestroom, and back to Johannesburg. The winning car, a 12-14-horsepower Gladiator, made the round trip without a stop of any kind.

Farmer Wins a Case—The jury in the case of Gabriel Strand, of Gilman, vs. the Auto Garage Co., of Grinnell, Ia., gave a verdict for the plaintiff, giving him judgment in the amount of \$1,619. The case will be carried to the supreme court, for the garage company thinks its chances are good for a reversal. Strand is a farmer living near Gilman. Some time since he was driving along the highway near that town when he met one of the Grinnell automobiles. His horses ran away, smashed his buggy and Strand claims to have been permanently hurt. Strand claimed the automobile party was exceeding the speed limit and disregarded his horses' frantic efforts to get away.

Questions Highway Rights—Judge J. Franklin Fort, at the opening of the September term of court in New Brunswick, N. J., in his charge to the grand jury raised a point as to whether automobiles have a legal right to public highways. He called the attention of the grand jurors to the automobile accident at Dunellen on August 25, in which Mrs. Westphal, of Plainfield, who was riding in the automobile of William Stambery, which collided with the wagon of Oscar Harrison, was killed. The court referred to the case as one probably of involuntary manslaughter. "I have not at this time found an act which makes it lawful for automobiles to be upon the public highway, though there is an act which tells the rate of speed at which they may be run," said Judge Fort. "The bicycle was placed upon the highway by an act giving it a right there. But for the purpose of this case you can consider that automobiles have a right on the highways."



FRANKLIN CAR DECORATED AS BATTLESHIP, IN SYRACUSE PARADE

Among Makers and Dealers



MAKING ALUMINUM CASTINGS IN THE LIGHT MFG. & FOUNDRY CO.'S PLANT

Finds It Pays—Chris Jorgensen, of Hol-drege, Neb., representing the Cadillac in western Nebraska, is building a new brick garage and repair shop to be ready soon.

Fry Out; Brand In—Jack Fry, manager of the Apperson Bros.' Chicago branch, retires at the end of this week. He will be succeeded by Fred Brand and will then go to Colorado on a health-seeking trip.

Poppenberg Fixed—The Poppenberg Automobile Co., of Buffalo, has taken the Rambler and Marion agencies for 1906 in that city. G. H. Poppenberg says the Rambler line is so large for next year that his company may not take on any other cars.

Melon Out at Hartford—The Hartford Rubber Works salesman cut a big melon last week, Vice President Seward handing each of the traveling men, as well as the branch managers, sums of money which were practically doubles of salaries, the money being paid in gold.

Two Consolidate—William Coons and Van Auken & Parkwood, of Lincoln, Neb., have consolidated into the Lincoln Automobile Co., with headquarters at 118-128 North Thirteenth street. The new concern will handle the White, Olds, Winton and Reo. It may add to this line.

New Peoria Firm—J. A. Holtsman, Robert P. Jack and Herman C. Kleene are the incorporators of the Illinois Automobile and Parts Co., of Peoria, Ill., the capitalization being \$100,000. A factory will be built at the corner of Main and Globe streets. The company will make a specialty of constructing parts. Local capital only is interested.

Trade Meeting in Syracuse—The board of directors of the Motor & Accessory Manufacturers' Association met in Syracuse, N. Y., Friday and talked over matters pertaining to their exhibitions at the shows to be held this winter. Most of the concerns represented have already engaged space and expected to make large exhibits. The following new members were elected: Motor Car Specialty Co., Trenton, N. J.; Edmunds & Jones Mfg. Co., Detroit; Atwood Mfg. Co., Amesbury, Mass.; Bryant Steel Wheel & Rim Co.,

Columbus, O.; Garford Co., Elyria, O.; W. K. Pruden, Lansing, Mich.; Eastern Carbon Co., Jersey City. The next meeting will be held in Boston the second week in November.

Erie Landmark Goes—Harry Racer, of Ash-tabula, Pa., is tearing down the old Sanford building in Erie, Pa., and will erect there a fireproof garage. The structure being demolished was one of Erie's landmarks and contained the first public hall the city ever had.

Jaynes Denies a Rumor—While W. C. Jaynes, of Buffalo, president of the National Association of Automobile Dealers, was away on a business trip last week he heard that there was a rumor abroad that he had withdrawn from the Jaynes Automobile Co., of Buffalo, to devote his entire time to the dealers' association at a high salary. "There's nothing to it like that," said Mr.



BRIEF BUSINESS MENTION

Bristol, Tenn.—J. K. James has opened an automobile sales and repairing shop on Lee street.

St. Louis, Mo.—The St. Louis Automobile Livery Co., of 3685 Olive street, has secured the local agency for the Jackson.

Buffalo, N. Y.—The Lincoln Improvement Co. has filed plans for a one-story brick garage to be built at 1116-1118 Main street. Cost, \$7,000.

San Francisco, Cal.—The Chrysler & Lyon Motor Supply Co., of Los Angeles, has established a branch at 503-505 Golden Gate, which will open October 1.

Pittsburg, Pa.—The Atlas Automobile Co., of the east end, have a deal pending for 125 feet of frontage in the Twentieth ward, on which it proposes to erect a \$35,000 garage.

Louisville, Ky.—Prince Wells is having plans drawn for a garage to be built on Fourth avenue on the Rolph property. A three-story building is to be built at a cost of \$35,000.

Pomona, Cal.—Tubbs & Thomas, agents for the Reo and Oldsmobile, are building a new store on Flush street, to be known as the Pomona garage. It will also conduct an automobile livery.

Minneapolis, Minn.—Work has been started on the new garage of the Great Western Cycle Co. on Sixth street S. The building will be a three-story brick building. The contract calls for the completion by January 1.

Jaynes on his return. "The office of president of the dealers' association pays no salary and I am still president, director and large stockholder of the Jaynes company."

Dolson In Gotham—The New York agency for the Dolson car has been secured by J. A. Lawrence. Salesrooms will be opened at 308-310 West Fifty-ninth street.

Hastings Dealers Prospering—Scott & Powers, of Hastings, Neb., representing the Rambler, has found it necessary to secure larger quarters and will move into its new place next week.

To Care for Cars—The Big Thunder Mfg. Co., of Belvidere, Ill., is adding to its present plant a special department for the overhauling and repairing of automobiles. It announces it is anxious to receive prices on automobile accessories from manufacturers.

May Move to Madison—The Bates Automobile Co., of Lansing, Mich., is said to be seeking a new location for its plant. Details are meager concerning the contemplated movement, but it is said that Madison, Wis., is favorably considered as a new location for the concern.

Pope Testing—The Pope Mfg. Co.'s Hartford factory is now testing out a four-cylinder car which is air-cooled. It is almost certain that the Hartford factory will continue to make two-cylinder cars, while the new gasoline truck and four-cylinder car will likely be added to the Pope line from the Hartford factory.

Buick's London Manager—The Buick Motor Co., of Jackson, Mich., is considering the establishment of an agency at London, England, for the sale of its cars throughout the British isles. The position of manager of the agency has been tendered W. C. Orrell, of Flint, Mich., who expects to leave early in October for a tour of Great Britain and Ireland in one of the 1906 Buick models. He will be accompanied on the trip across the pond by C. C. Hyatt, also of Flint.

Talks of Iron Tread—Jack Roache, a former Hartford, Conn., man, who cast his fortunes with Thomas W. Lawson, and who became famous as the owner of some of the world's most precious stones, is in Hartford on business in connection with the iron tread pneumatic wheel invented by Rutherford, of which company Roache is president. Roache is authority for the statement that the company has orders for 160 sets of tires, and claims he wouldn't take \$2,000,000 for his investment.

A New Columbia—The Electric Vehicle Co.'s model room, too, is busy and the season's new models are now practically completed. The line of Columbia gasoline cars for the coming season is not being talked of publicly at the present time, but it is said that the two-cylinder car will be continued with 15 inches more wheel base than the 1905 model contained. There will be other slight changes, but in the main the car will be the same as the one which had such a large sale during the present season. The Columbia big car will have a number of important changes, but will not be radically different from what has gone before. Roller bearings will replace plain ones in the wheels. A new Columbia will make its appearance, though. This car will also be of the four-cylinder type and will be practically the big car cut down to 25 horsepower. The tou-

new will be a commodious one for four or five people. The price has not been determined upon, but it is likely that it will be close to \$3,000.

Printer's Mistake—The Kirk Mfg. Co., of Toledo, O., corrects a printer's error in the last issue of MOTOR AGE by stating that its 1906 model will list at not less than \$2,800, instead of \$2,000 as stated.

Kirk in His New Job—Ezra Kirk, formerly of Toledo, has begun his active work with the E. R. Thomas Motor Co., of which he is now the general sales manager. Mr. Kirk assumes the place formerly held by Frank Heath.

Moon Plans—The Joseph W. Moon Buggy Co., of St. Louis, writes that it will not build a runabout, as stated recently in MOTOR AGE. Instead it will turn out a 30-35-horsepower high-class touring car, to be known as the Hercules.

New M. & W. Branches—Morgan & Wright have recently opened branches at Boston and Minneapolis, the former at 228 Columbus avenue, with Alfred Measure in charge, and the latter at 708 Hennepin avenue, with C. S. Marshall as the representative. Both houses handle sundries, as well as being the Morgan & Wright representatives.

New In New York—The Manufacturers' Motor Car Co., of New York, has leased the building at 54-56 West Forty-third street and is installing a plant. The firm will deal in new and renovated cars, and will confine itself to well-known makes. Ralph B. Nettleton is the general manager of the company and Luman N. Ellis secretary.

New Syracuse Enterprise—A new concern has been organized in Syracuse, N. Y., for the purpose of manufacturing high-grade castings of aluminum brass and bronze. W. B. Lipp is president and H. W. Chapin secretary. Charles L. Ackerson, formerly connected with the National Car Wheel Works, of Rochester, is general manager. The old factory of the Stearns Steam Car Co. has been secured and is being fitted up.

Coey Building—C. A. Coey & Co. are erecting on Michigan avenue and Fourteenth street, Chicago, a two-story building 50 by 171 feet, located in the center of automobile row. In addition to this they also will have ready, in about 30 days, a garage, located on Indiana avenue, between Sixteenth and Seventeenth streets. This garage will have a frontage of 114 feet and will be 170 feet in depth. C. A. Coey & Co. handle the Thomas Flyer, and state they sold 103 cars this year. They recently placed an order with the E. R. Thomas Motor Co. for 200 cars for 1906.

Makes Aluminum Castings—The Light Mfg. & Foundry Co., of Pottstown, Pa., makes a specialty of aluminum castings for automobile construction. The advantage of this class of castings is that it combines great strength with exceptional lightness and the fear of corrosion is eliminated. Aluminum is found in all clays, but only these clays can be used that are practically free from silicon, more than 1 per cent of silicon practically destroying the usefulness of an aluminum casting. To produce aluminum oxide, from which the metal is reduced by electrical processes, the importance of eliminating all foreign matter is the main item of expense, as well as being especially important in the making of the different aluminum alloys. It is of

RECENT INCORPORATIONS

Columbus, O.—The Colonial Tire & Rubber Co., of Akron, has been incorporated with a capital stock of \$6,000.

Albany, N. Y.—The Auto Improvement Co., of New York city, has been incorporated with a capital stock of \$200,000.

Albany, N. Y.—The Newcomb Motor Co., of Harrison, Westchester county, has been incorporated with a capital stock of \$400,000.

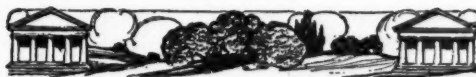
Buchanan, Mich.—The Lee & Perkins Manufactory Co. has been organized to manufacture all kinds of vehicles and automobiles. Capital, \$200,000.

Albany, N. Y.—The Hotel Gramatin Livery Co. has been incorporated with a capital stock of \$5,000. It will maintain a livery, storage and garage business.

Columbus, O.—The Capital City Automobile Co. has been incorporated to handle all kinds of new and second hand automobiles and to do a general garage and repair business.

Pittsburg, Pa.—Application has been made for a charter for the American Motor Co., which proposes to manufacture, store, sell and repair all kinds of motor cars, motor boats, etc.

Albany, N. Y.—The Mercedes Import Company, of New York city, has been incorporated with a capital stock of \$100,000 to manufacture and deal in automobiles and launches. E. C. DeWitt, M. Wineburgh and Arthur Braun are incorporators.



equal importance to know of the exact purity of the other metals entering into the alloys. For this purpose the principal metals used are zinc, copper, nickel and tungsten and a number of others are used with success. The peculiarities of the metal are many and to get the best results in casting the designer, pattern maker and founder should thoroughly understand the peculiarities which the finished product will possess. In increasing the strength of a piece of work it is not always the best policy to merely thicken the sections, but it is better to use webs and ribs with nicely rounded fillets. There is some difference of opinion as to the proper shrink rule to use. The Light concern prefers the 7-32 rule, this having proven satisfactory. The annoying defects in aluminum castings are surrogations, shrink cracks and air cavities. Surrogation can generally be overcome by using chills; shrink cracks are due principally to the metal, cores, moulding, designing and anything else to be found handy, upon which to place the blame; air cells may be avoided by pouring

and making the pockets so that the air cannot be caught by the flow of the metal. The prime requisites in making the castings are good metal and experience.

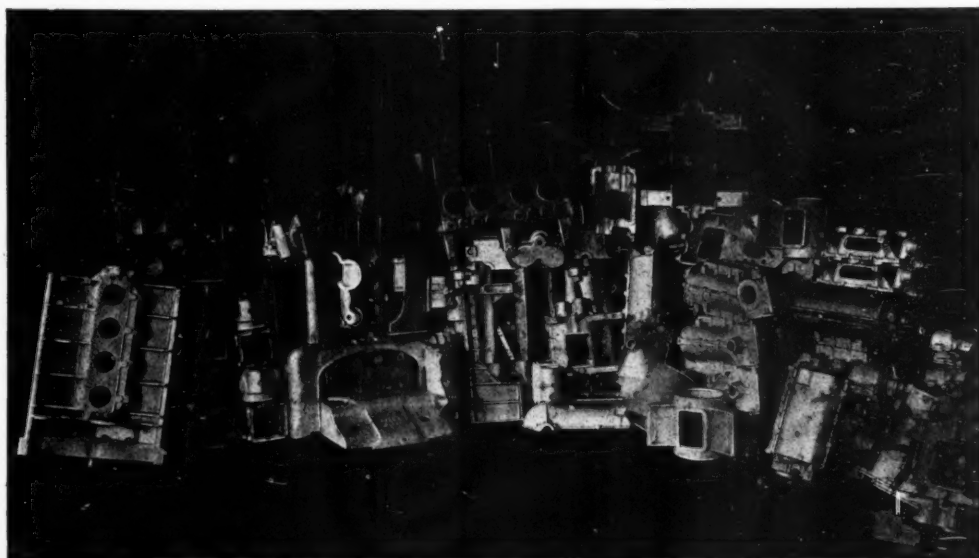
Asks for Receiver—T. W. Farris has asked that a receiver be appointed for the Western Automobile Co., of Wichita, Kan., charging that he has not received his share of the profits of the concern.

Gives Up Branch—The H. H. Franklin Mfg. Co., whose New York branch has been established for the past 2 years, is about to turn its business over to the American Auto Storage Co., it is reported.

Melon Cut—The Lansing Auto-Body Co., of Lansing, Mich., held its annual meeting last week and in addition to declaring a dividend of 10 per cent voted to increase the capacity of the factory so as to double its output.

Strike Hampers E. V. C. Co.—The Electric Vehicle Co. is being inconvenienced by the strike of the bridge workers directed against the American Bridge Co. and the new addition to the company's factory is being held up when its use is greatly needed. The building is completed with the exception of the roof and as it is to be used for the assembly of the electric cars of the coach class, and as this is the class of trade that is claiming all of the company's attention at the present time, there is great pressure being brought to bear upon the contractor to get the building completed so that the Electric Vehicle Co. can take possession.

Grant Back From Europe—R. H. Grant, superintendent of the Standard Roller Bearing Co. of Philadelphia, has just returned from an extensive trip throughout England, France and Germany, where he visited all the principal factories devoted to making automobiles, automobile axles, steel balls, and ball bearings. The Standard company has, during the past year, purchased a large amount of machinery especially designed for producing annular ball bearings. A special building has also been erected recently, 70 feet by 125 feet, devoted exclusively to a department for hardening and tempering ball and roller bearings. The furnaces are equipped with a special apparatus which tells the exact degree of heat in each furnace. The recent purchase by the Standard company of the Federal Mfg. Co.'s ball business resulted in giving a capacity of 2,000,000 completely finished balls daily.



SPECIMEN ALUMINUM CASTINGS MADE BY LIGHT MFG. & FOUNDRY

AMERICAN MOTOR LEAGUE

OFFICERS

ISAAC B. POTTER, President,
Potter Building, New York.
CHARLES E. DURYEA, First Vice-Pres.,
Reading, Pa.
W. GRANT MURRAY, Second Vice-Pres.,
Adrian, Mich.
S. W. MERRIHEW, Third Vice-Pres.,
154 Nassau St., New York.
FRANK A. EGAN, Secretary,
132 Nassau St., New York.
FREDERICK B. HILL, Treasurer,
32 Blinford St., Boston.

National Headquarters
Vanderbilt Building New York



THIS LEAGUE

Is Now Collecting Route Information

covering all automobile routes in the important states and will publish road books for motor car users as fast as complete information is received. The A. M. L. is the only organization engaged in this work, and it invites the co-operation of all persons interested. For full information and membership blanks address American Motor League, Vanderbilt Building, New York City.

WHAT IS THE LEAGUE?

The American Motor League is a national organization of motor car users—the only national body which invites to its ranks all motorists and accords equal rights to all. It recognizes the fact that 90 per cent of American motorists are not club members and believes that these men should have a vote and voice in the management of the national body. The league was organized in October, 1895, and its growth has proceeded with the growth of motoring in the United States of America.

WHAT IT IS DOING

It is sending out thousands of route blanks and requests for route information and is preparing route books and useful hand books of information and instructions for free distribution among its members. This work will proceed as rapidly as the growth of the league will permit, and every user of a motor car is invited to join in the work.

It is now distributing thousands of copies of printed specifications and instructions explaining how guide boards and caution signs should be made and put up, and a special circular on how to describe a route, so that any friend of the organization may prepare and send route information in the best and clearest form.

It is collecting and compiling the laws and ordinances relating to the use of motor vehicles, in force in the different states and important cities, and will print these laws, together with leading court decisions, for the benefit of its members and other users of motor vehicles.

It is preparing a list of official hotels in all parts of the country, where its members may be assured of comfortable fare and courteous treatment. All proprietors of official hotels are under contract, and a hotel appointment will be promptly canceled in any case where league members fail to receive attention.

It is preparing a list of official repair shops and supply stations where its members may be assured of courteous and skillful attention and reasonable charges. Each proprietor is under contract with the league and in many cases a special discount is given to league members.

It is maintaining a live, vigorous, progressive movement to make the use of the motor car popular, to dispel public opposition and prejudice against its reasonable use; to unite all persons who favor the development of the new vehicle into a strong and influential national body of power and influence.

The league is opposed to the dangerous

AMERICAN MOTOR LEAGUE

What it is; its plan of organization; its work and objects; what the league proposes to do and why it should command the support of every motor car user in the United States.

practice of speeding motor cars on the public streets and roads, and to the holding of races on the public highways. It believes that such racing is a perversion of the use for which these roads were dedicated, besides being calculated to foster opposition and prejudice in the minds of other persons whose use of the roads is thus impeded.

WHAT IT PROPOSES TO DO

The A. M. L. is about to establish a state division in every important state of the union and motor clubs in all important cities and towns where members can be found who will take up the local work. Each state division will have its chief consul and other necessary officers and under their directions the affairs of the league—including legislation—within the state, will be administered. Each motor club will elect representatives to the state board of officers and representatives will also be elected by non-club members according to the districts in which they reside. For this purpose each state will be divided into several districts. Each state division will, by its board of officers, elect delegates to the national assembly, and the last named body will elect the national officers of the league and direct its affairs to the best of its ability.

LOCAL CONSULS

The league needs a live, active, aggressive representative in every town in America where the motor car has found its way. The president will appoint official consuls in such towns as fast as the right men can be found, and with their certificates of appointment will be sent printed matter explaining a consul's duties and setting forth at length the objects and purposes of the league. Membership blanks will also be supplied, not only to local consuls, but to any league member or other motor car user who will aid in building up the organization.

The league stands for better roads. It has sent out 5,000 copies of an illustrated hand book describing the best way of making a

macadam road. It will double its edition and send out another book on country roads within the next year. Should this work be supported?

It is about to print a useful little hand book on the practical use of the motor car and this little book will be sent free to every member. Is this a benefit worth considering?

It has collected and filed over 3,000 pages of maps and route information to be put in road books for ten important states. It will prosecute this work and complete these books as rapidly as its numerical and financial growth will permit.

The league wants members, thousands of them; members who have the courage of pioneers; members who will not doubt, or halt, or hesitate; members who will stand together and make the organization what it should be—a splendid national body, representing all that is best in motoring and bringing to its members the rights which are lawfully theirs, and the benefits which, by co-operation, they are sure to enjoy.

ANNUAL DUES

There is no initiation fee. There are no salaried officers. No member of the league receives any compensation for any service rendered to the organization. The annual dues are almost nominal, \$2 per year. It has been argued that this sum should have been made \$5, but motoring grows rapidly and the smaller sum will probably be sufficient as the membership increases. Printed matter describing the work and objects of the league will be sent by the secretary to any person who will send his name and address to league headquarters. The secretary is particularly anxious to hear from motor car users who will aid in forming state and local bodies in different parts of the country.

The handbook already mentioned on this page will be printed in serial form in *MOTOR AGE* and will then be put in book pages, bound and distributed to league members. The matter for this little book is now appearing weekly in *MOTOR AGE*.

WRITE THE SECRETARY

He has much league work to do, besides a few personal affairs which command his attention now and then, but he is always glad to hear from the man who has something to say. No man need hesitate to undertake a little league work in his home town or state. It is neither burdensome nor exacting. On the contrary it can be made pleasant and interesting. Address Frank A. Egan, secretary, Vanderbilt building, New York.

WINTON

Let's Look at the Engine

The engine is the vital part of an automobile and **must** be good.

This Winton Model K engine has four cylinders. Therefore, it is **producing power all the time**—not half the time like a two-cylinder nor one-fourth the time like a one-cylinder. It is vertical, in the prevailing style, and water-cooled, so that it will not **burn up** from its own heat, nor consume oil wastefully. Its 4 $\frac{1}{4}$ -inch bore and 5-inch stroke might mean 40 horsepower, according to some estimates, but we are conservative and call it 30. That's all the power Model K needs to climb any traffic-used hill with ease or to make a speed within safe limits. Cylinders are cast in pairs: that gives greater stability of construction than four separate cylinders, and permits perfect cooling. These cylinders are made of exceptionally tough stock and are ground from **six to twelve times**, so that each cylinder is a **perfect circle**. Pistons and eccentric piston rings are likewise accurately ground. And the result is that each Model K piston fits each Model K cylinder perfectly. Consequently there is no leak of compression, that is, no waste of power. You know how distressing it is to drive on a wet asphalt pavement where the wheels can't get proper traction, but slip, slip, slip? Well, that's loss of power, just like the loss through wasted compression. Model K's perfectly ground cylinders and pistons also prevent the friction, scraping, grinding and scoring that ruin so many unground cylinders and pistons. Therefore, all this means to you money saved through economic use of fuel and power and through long-lived machinery.

Model K's crankshafts are ultra-powerful. Made of special treated carbon steel and tested to 95,000 pounds to the square inch. Likely to last forever.

Bearing surfaces are accurate and substantial. Camshaft gears are enclosed, insuring protection and perfect lubrication.

Lubrication is one of Model K's strong points. Some makers use splash or dip or guesswork lubrication. We don't. On Model K oil is fed **regularly and positively** to each piston and each crankshaft bearing, direct from the Hill Precision Oiler (of which we will send a detailed description upon request). This oiler has the force of a **catapult** and the accuracy of mathematics. There is always a film of oil around the pistons and in all the bearings, causing the engine to run "sweetly" and with no wearing friction whatever.

Good lubrication, perfect fitting bearings, and the use of rawhide gears between metal gears, and of a sound-deadening dust shield, make Model K's engine delightfully quiet.

Then, too, if for any reason you want to get at Model K's working parts, you simply lift a cover, and there you are. You can remove pistons, connecting rods, crankshaft, etc., without tearing down the car, using a derrick or groveling around in a pit. Just unbolt the left half of the aluminum crank case and all these parts are ready for removal. And remember that you take out these parts while you stand at the car side—you do not detach motor accessories (not even a spark plug)—you do not detach cylinders from crank case—you remove nothing but the side of the crank case and the parts you want to take out. Simplest thing in automobile construction.

Model K—Four cylinder, vertical, water-cooled, 4 3/4 in. bore, 5 in. stroke. Shaft drive. Individual clutch transmission. Winton Air Governor. Most approved system of lubrication, ignition and carburization. Seats six. \$2500 f. o. b. Cleveland. Complete details set forth in Catalog No. 2.

The Winton Motor Carriage Co.
CLEVELAND Member A. L. A. M. OHIO, U. S. A.

AUTOMOBILES DE DIETRICH & Co

130 h. p. Racer

**Selected to represent France in the
W. K. Vanderbilt, Jr., Cup Race
on October 14, 1905**



Holds 100-50-1 Mile World's Record

**Winner with 40 h. p. regular Stock Touring Car of ten
days' endurance—Coupe des Pyrenees—
against 68 other cars**

Second in the Florio (Italy) Cup Race

· Early Delivery

Demonstrations by Appointment

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FIAT

AUTOMOBILES

"The Aristocrat of Auto Cars"

What better evidence can be given of the superiority of these famous Italian Cars than their record at the Gordon Bennett Race? Not only did they capture second and third places, but Lancia made the two fastest circuits of the way. FIAT cars now hold

FIVE WORLD RECORDS

- 1 MILE TRACK RECORD (Gasoline)
52 1-5 seconds, made by Chevrolet in Major Miller's "FIAT" at Morris Park.
2. WORLD'S MIDDLE WEIGHT RECORD
55 4-5 seconds, made by E. Parker, at Morris Park, July 4th.
3. WORLD'S LONG DISTANCE ROAD RECORD
260 miles, made by Lancia at Brescia. Average speed 72 1-5 miles per hour.
4. MOTOR BOAT RACE ACROSS THE MEDITERRANEAN (200 miles)
Won by "FIAT X" in 12 hours, beat nearest competitor 4 hrs. 50 sec.
5. WORLD'S MIDDLE WEIGHT 50 MILE RECORD
53 minutes, 14 2-5 seconds in "FIAT JR.," (only 24 H. P.) at Long Branch, August 22d.

Hollander & Tangeman

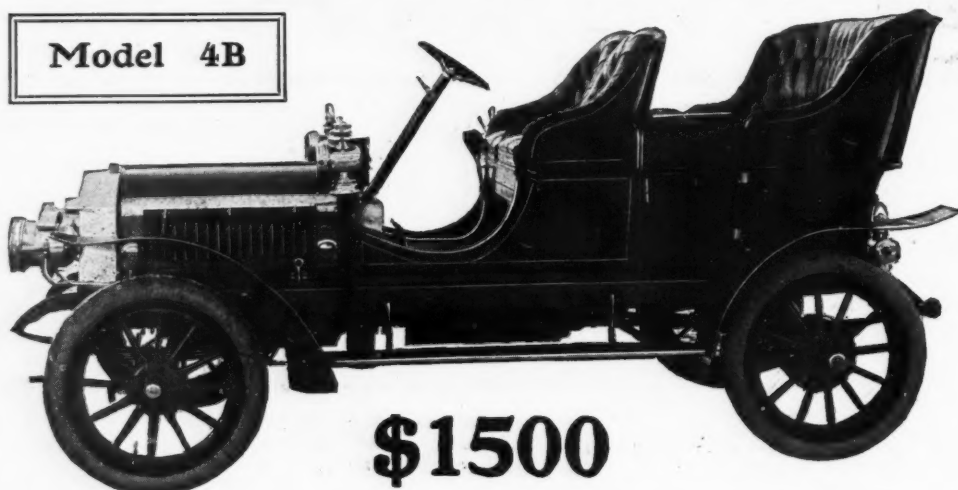
3 and 5 West 45th Street : : : : NEW YORK

SOLE AMERICAN AGENTS

Licensed Importers Under Selden Patent

WHEN YOU PAY MORE

Model 4B



\$1500

An ideal touring car at an ideal price. 18-20 h. p. (4-cylinder vertical motor), \$1,500. One h. p., for every 85 pounds of weight. No radical features or untried devices for which you will have to pay for the experiments.

It embodies the best features of the most famous cars, but it is different in at least one essential—price. A 4-cylinder touring car at \$1,500 seems unusual, you say? It is more than unusual—it's wonderful.

for a touring car or run-about than our price, you are paying for features which you get without extra charge in the

MITCHELL

It is not only "the car you ought to have at the price you ought to pay"

Model 2B



\$750

2 cylinder, 9 h. p., vertical motor, mounted in front. This Runabout is as carefully designed, as up-to-date and smart in appearance as any three or four thousand dollar car ever built. It has ample power for all conditions of road and its hill climbing abilities are unsurpassed. It is all that any man may want in a Runabout.

It is **more**. It is absolutely the best car—the most perfectly constructed—the most simple to operate and the most stylish car in appearance on the American market. You cannot **possibly** do better than to buy a **Mitchell**.

WRITE FOR CATALOGUE

MITCHELL
Motor Car Co.
RACINE, WISCONSIN

Member American Motor Car
Manufacturers' Association,
Chicago

CADILLAC



KING OF ENGLAND OWNS 1 DAIMLER, 1 DARRACQ, 1 MERCEDES



EMPEROR OF GERMANY OWNS 3 MERCEDES, 1 FIAT

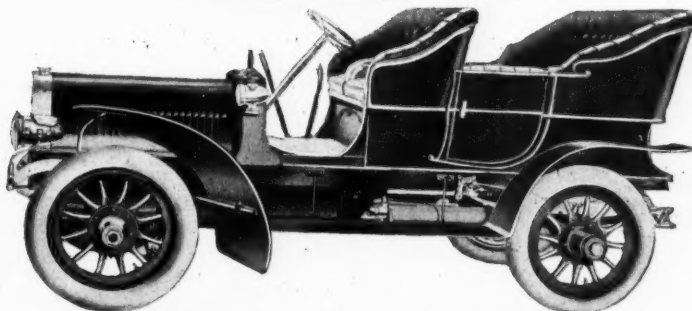


CZAR OF RUSSIA OWNS 1 DARRACQ

The Cars of the Foreign Monarchs vs.



PRESIDENT ROOSEVELT HAS HIS EYE ON A CADILLAC



MODEL D. 4 CYLINDER CAR, \$2,800



PRESIDENT OF FRANCE OWNS 1 C. G. V.

CARS OWNED BY MONARCHS

Paris, Aug. 12—M. Loubet, president of France, is now up with the times, having, after much persuasion, ordered his first automobile—a 25-horsepower C. G. V. with limousine body. This fact has led to the compiling of a list of monarchs and rulers of states who possess automobiles. It is as follows: King of England, a Daimler, a Darracq and a Mercedes; emperor of Germany, three Mercedes and a Fiat; czar of Russia, a Darracq; king of Italy, a Panhard and a Fiat; king of Spain, a Panhard; king of Portugal, a Panhard; Queen Wilhelmina of Holland, a Mercedes; shah of Persia, several Gardner-Serpollets; king of the Belgians, two Mercedes and a Mors; prince of Monaco, a Mercedes and a motor cycle; queen of Italy, a Wolseley.



KING OF SPAIN OWNS 1 PANHARD, 1 RICHARD BRASIER



KING OF ITALY OWNS 1 PANHARD, 1 FIAT

The Choice of American Men

A recent canvass of ten Eastern States showed 1131 Cadillacs owned therein—the other makes ranged from 750 down to 5 or less.

WHY DO YOU SUPPOSE THIS WAS?



SHAH OF PERSIA OWNS SEVERAL GARDNER-SERPOLLETS



KING OF PORTUGAL OWNS 1 PEUGEOT



KING OF BELGIUM OWNS 2 MERCEDES, 1 MORS

CADILLAC AUTOMOBILE CO., - Detroit, Mich.

Member Association Licensed Automobile Manufacturers.

A Few Words to the Automobile Agent

- ¶ If your Agency arrangements during the past year have been satisfactory, do not make any change.
- ¶ We don't believe in changing Agencies unless there is a good reason. Naturally, we desire to get in touch with the best men in the business, as we want the strongest sales organization we can get for the WAYNE cars.
- ¶ There are two ways for a manufacturer to obtain his Agents. One is to have a high-priced sales manager---an entertaining gentleman of fine address who can go out and make contracts irrespective of the actual merits of the car. The other method is the "show me" method, where the manufacturer gets down to "brass tacks" and makes his Agency arrangements based upon the actual merits of his car and by giving the Agent a fair and square deal all around. The Wayne cars have won a foremost place among American Automobiles by actual merit, and the Wayne Automobile Company have made rapid strides to the front.
- ¶ Last year we spent upwards of \$50,000 in judiciously advertising our Cars. This year we are going to do even more advertising, and the Agent who takes the Wayne car now is going to get the benefit from this publicity and is going to get the hearty co-operation of the factory as well.
- ¶ We have perfected arrangements for early and prompt delivery of our 1906 models because we want to be in a position to carry out the "show me" policy and to live up to our Agency agreements.
- ¶ We have the cars, gentlemen, we have the facilities for manufacturing and for making deliveries, and we are going to do our full share in thoroughly advertising the Wayne cars. Now, we want to get our 1906 Agency arrangements closed and then we are all in shape to make money. Will you write us about the Wayne representation in your territory today?

WAYNE AUTOMOBILE CO., DETROIT, MICH.

Next Year's STEVENS-DURYEA

Will be the same as the 1905 car—no more horsepower—no less price—no change in the design of the mechanism.

We never did believe in changing models every year—we think there are lots of people who are deferring the purchase of an automobile until there is less changing.

Anyway, What's the Use of Changing?

We've got the fastest car of its size that ever happened. We've won every hill climbing contest that we could get in. We are two years ahead of them all on ACCESSIBILITY and DURABILITY. We have solved the "tire problem,"—not to our satisfaction, but to the complete satisfaction of the users. We have a clutch that we don't believe will be improved upon for some time to come. We produce more results with less weight, less parts, less pedals, levers, wires, pipes,—we can shift gears with a sound—we can go slower on the high gear—when in crowded traffic—we have easier springs, a wider door, more foot room for the operator, better brakes, more clearance for rough roads, an aluminum body that doesn't open up in the joints, good dust-proof, double acting brakes, a better weight distribution on tires than ever before attained, and a lot of other good things,—so we have decided to rest on our laurels for the time being and devote our energies to the making of more cars and prompter deliveries.

J. STEVENS ARMS & TOOL CO.

Makers of the "Twentieth Century Hustler"

305 Main Street :: :: :: CHIGOPEE FALLS, MASS.

Member Association Licensed Automobile Manufacturers.

Of the five cars which qualified for the Vanderbilt Cup Race,
Four of them used the

WITHERBEE

Storage Battery Igniter

EXCLUSIVELY



The fifth used a magneto.

Every battery guaranteed or purchase money refunded. This guarantee protects your customer after the car has been delivered.

Can you afford to consider anything else other than the **WITHERBEE** for your '06 product?

Write for descriptive pamphlet and discount sheet.

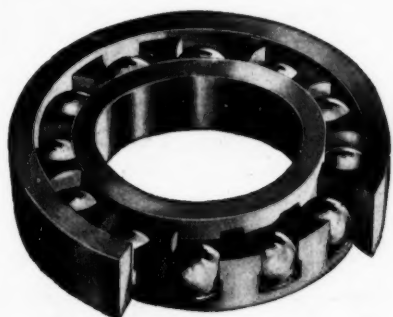
Electros furnished to Jobbers.

WITHERBEE IGNITER COMPANY

26 Thames Street,

-

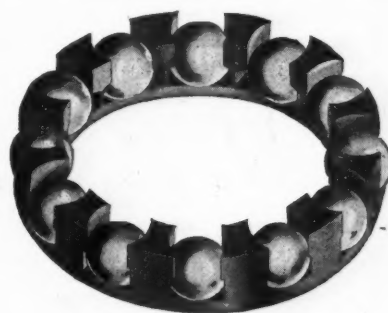
NEW YORK CITY



SILENT TYPE

Standard Roller Bearing Co.

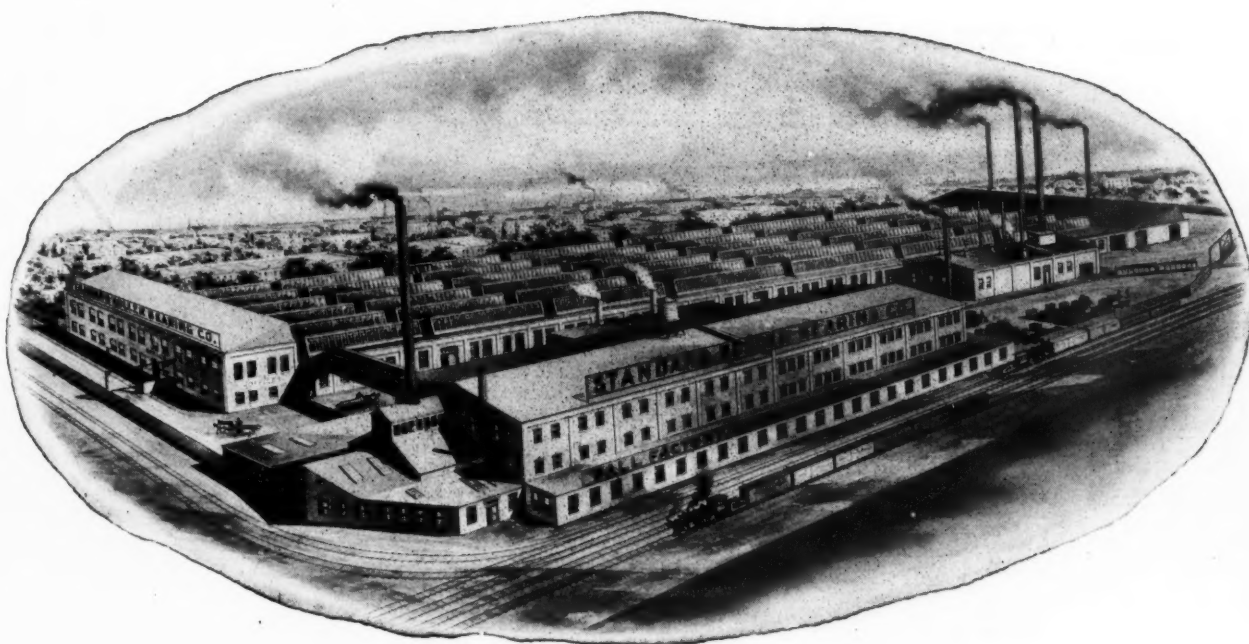
48th and Girard Ave.
Philadelphia, Pa.



CAGE OR SPACER

Largest plant in the world for exclusive manufacture of

ANTI FRICTION BEARINGS AND AUTOMOBILE AXLES



Total space occupied, 145,000 square feet. Main Machine Shop, 150 ft. wide by 500 ft. long. Steel Ball Factory, 70 ft. wide by 300 ft. long, three stories in height. Steel Converting and Tempering Plant, 50 ft. by 110 ft. Power Plant, Engines and Generators, 800 H. P. Steel Ball Output, 2 million balls daily.

WE MAKE ANNULAR BALL BEARINGS



FULL TYPE

We will positively guaran-
tee prompt deliveries

Send for Annular Bearing Catalog

Standard Roller Bearing Co.
Philadelphia, Pa., U. S. A.



FLANGED BEARING
(Either Full or Silent Type)

WHAT YOU WANT

WHEN YOU WANT IT

SYRACUSE ALUMINUM & BRONZE COMPANY

DIRECTORS

WILLARD C. LIPE, President
ALEXANDER T. BROWN, Vice-President
H. WINFIELD CHAPIN, Secretary

Syracuse, New York

DIRECTORS

CHAS. L. ACKERSON, Treasurer and Manager
W. H. DIEFENDORF

A New Company, An Old Organization :: Latest and Best Equipment Money Can Buy
A Good Workman With Good Tools Means a Good Product

WE are prepared to furnish immediately Aluminum, Bronze and Brass Castings for Automobile and other service from alloys which have been thoroughly tested under the most severe conditions.

Aluminum requires special knowledge on the part of the foundryman in order to handle it successfully. This knowledge can only be acquired by experience. We have had the experience. You will have the benefit of it if we do your work. Maximum strength with minimum weight.

Let us figure on your 1906 requirements.

SYRACUSE ALUMINUM & BRONZE CO.

SYRACUSE, NEW YORK

Aluminum

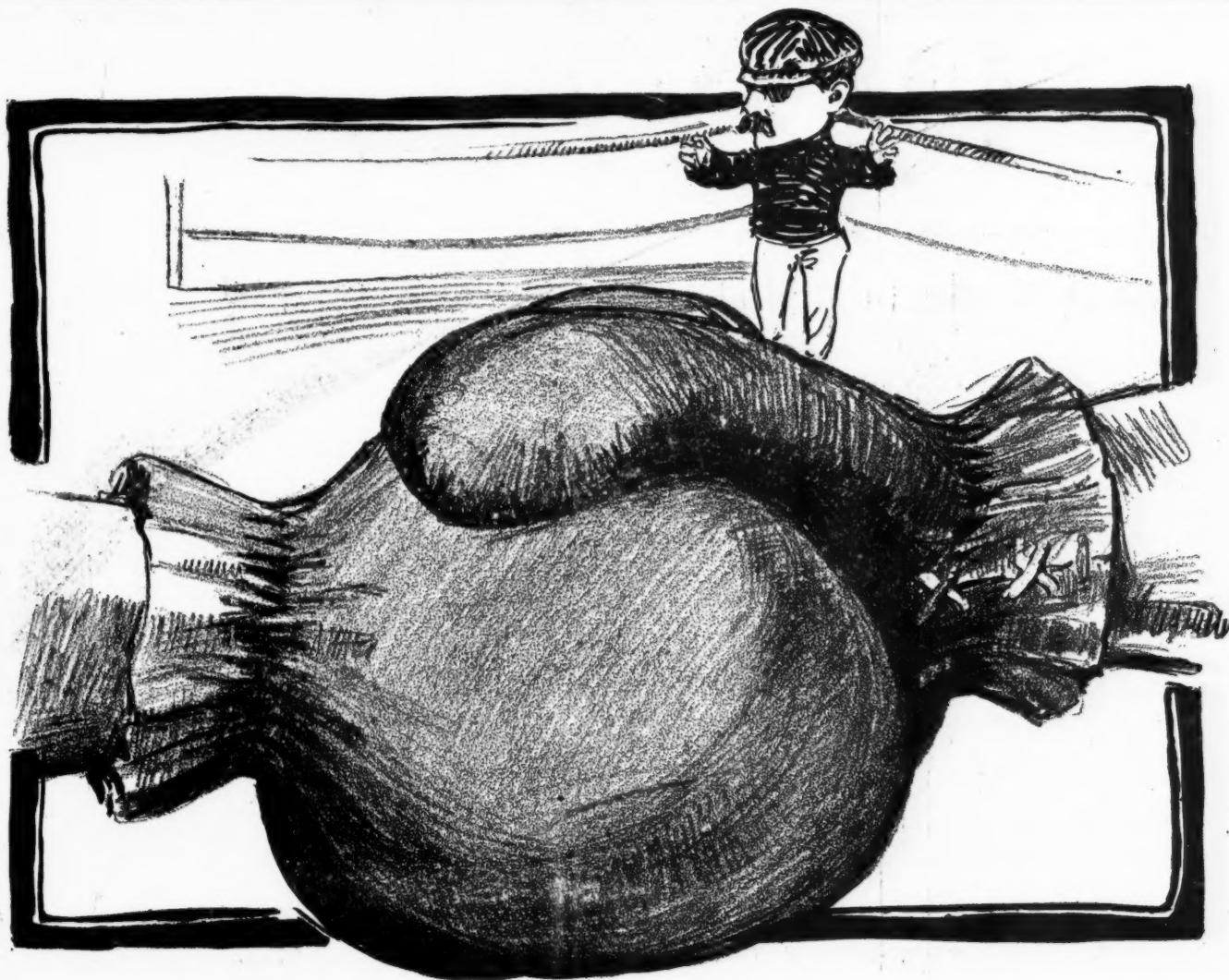
Aluminum Bronze

Phosphor Bronze

Bronze

Brass

TIME!



To place your 1906 Orders for

RADIATORS AND HOODS

(HORIZONTAL OR VERTICAL TUBES)

(ANY STYLE OR DESIGN)

Motor Car Makers with memories of 1905 will appreciate what prompt deliveries will mean to their agents the coming season. We want your business, and solicit correspondence in connection therewith.

DIAMOND STAMPED WARE CO.
DETROIT, MICHIGAN

The ROYAL TOURIST

Finished Third in Eliminating Trials

The Car Used was
taken from
Regular Stock, Stripped

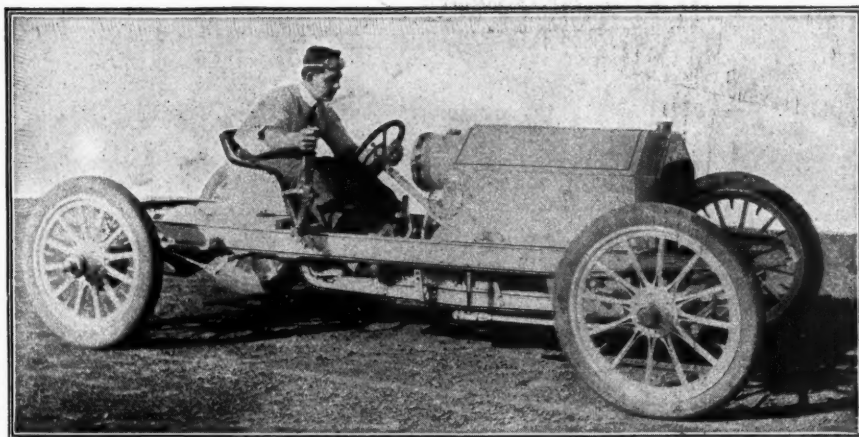
THE ROYAL MOTOR CAR CO.
CLEVELAND, OHIO

AGENTS

NEW YORK: C. A. Duer & Co., 58th & Broadway
BOSTON: G. J. Dunham, 182 Columbus Ave.
PHILADELPHIA: Motor Shop, 317 N. Broad St.
CHICAGO: The McDuffee Automobile Co., 1449
Michigan Ave.

ST. LOUIS: Westminster Automobile Co., 4396
Olive Street.
MINNEAPOLIS: G. W. Coplin, 424 So. 5th St.
TORONTO: Automobile Supply Co., (Limited),
24 Temperance St.

Peerless



The Peerless Stripped Car

of only 35 H. P. that was driven at Detroit, Cleveland and Buffalo by Chas. Burman, has the most wonderful speed record of any car ever built that is not a specially constructed racing car. It has a mile record of 58 2-5—three seconds faster than any other car of its class—and has never failed under ordinary conditions to do a mile in one minute flat. At Detroit it won against the next fastest stripped car by more than 3-8 of a mile in a five-mile race, and at Cleveland and Buffalo it won easily against famous racing cars of as much as 80 H. P.

The conclusion to be drawn is very obvious. The man who wants the car with the most reserve power, not only in the engine but at the wheels, the man who would take bad hills and bad roads as easily as ordinary grades, and city streets, must buy a Peerless.

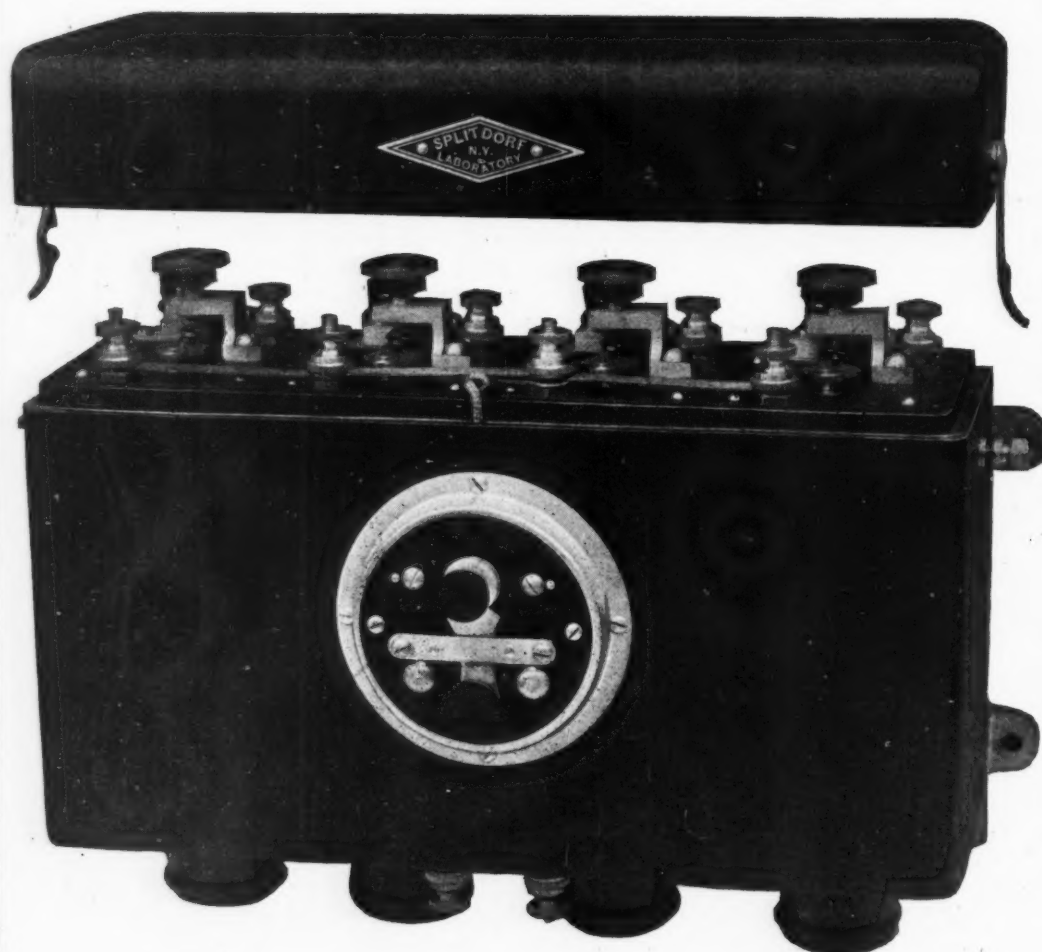
Send for Catalogue and let us put you in touch with our nearest Agent and arrange for Demonstration.

THE PEERLESS MOTOR CAR CO.

Lisbon Street, Cleveland, Ohio

Member A. L. A. M.

Splitdorf and Reliability Are Synonymous



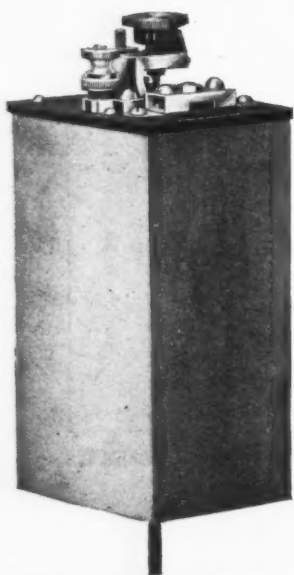
*Again
Demonstrated
in the*

VANDERBILT CUP ELIMINATION TRIALS



Of the five cars
to qualify, four used
Jump Spark, one
Make and Break.
Of the four Jump
Spark, three were

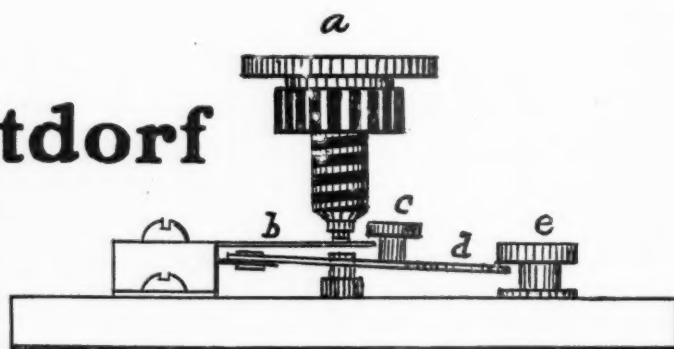
SPLITDORF



Always called upon where reliability is necessary.
This should make it easy to select your 1906
equipment.

C. F. Splitdorf

17-27 Vandewater St.
New York, N. Y.



THE HAYNES 1906 four cylinder REGULAR STOCK TOURING CAR qualified for the Vanderbilt Cup Race in competition with a long list of the most powerful specially constructed racing cars ever built in America.

Compare the cylinder capacity of the engine in the HAYNES car (5 in. bore x 6 in. stroke) with that of all other entrants. Nutt had been around the course in this car only three times prior to the race and was the only contestant who had never before driven in a race. The only stop he made with the HAYNES car was necessitated by an oil can bouncing into the fly wheel and spilling oil on the master clutch, causing it to slip.

Just think what it means for a stock touring car to win honors from specially built monster racing cars. That is what THE HAYNES STOCK CAR did. IF YOU ORDER A HAYNES 1906 TOURING CAR YOU GET AN ABSOLUTE DUPLICATE OF THE CAR DRIVEN IN THIS CONTEST.

We are now booking orders and closing agencies for 1906 HAYNES CARS.

Write us to-day.

HAYNES AUTOMOBILE COMPANY

(THE HAYNES-APPERSON CO.)

KOKOMO, INDIANA

MEMBERS A. L. A. M.

NEW YORK

CHICAGO

Motor Age Circulation

Here is a boost in the right direction from an advertising manager who uses great judgment in the selection of his mediums. -- --

Detroit, Mich., Sept. 11, 1905.

Mr. N. H. Van Sicklen, Manager MOTOR AGE, Chicago, Ill.

My Dear Van: It may be some source of gratification to you to know that at the present time MOTOR AGE is giving us the best results of any of the trade publications we are using. I am personally very well pleased with your paper. It is one of the most interesting papers from the dealer's viewpoint of any I know of and you know it is the dealer we are looking for and we are willing to pay a higher rate for this class circulation than we do for magazine circulation. The extra space that we have been using in your paper is proof of our views on this subject.

Very truly yours,
(Signed) CADILLAC AUTOMOBILE COMPANY,
J. Elmer Pratt, Adv. Manager.



Explanation.—Twenty-five per cent of Sept. 14 issue was printed on enamel book paper, weighing 15 oz. to each paper; 75 per cent on regular stock, weighing 12 oz. each; making an average of 12¾ oz.

The above cut represents Post Office Receipts for 9,568 pounds net, equaling over 4¾ tons of issue of Sept. 14, 1905.

Each paper, including wrapper, weighed an average of 12¾ ounces.

9,568 pounds divided by 12¾ ounces equals.....

12,006 papers

We also sold, non-returnable, to Western News Co., and news stands direct.....

661 "

Mailed under stamps to foreign addresses.....

89 "

Retained for office sales and distribution.....

350 "

Total for week of Sept. 14.....

13,106 "

STATEMENTS PREVIOUSLY PUBLISHED.

Average weekly edition for July, 11,755—see page 38, August 24 issue.

August 17, page 42, statement for August 3.....	13,159 papers
August 24, page 39, statement for August 10.....	12,269 "
August 31, page 38, statement for August 17.....	12,176 "
September 7, page 29, statement for August 24.....	12,271 "
September 14, page 42, statement for August 31.....	12,518 "

62,393 "

Average weekly edition for August, 12,468

September 21, page 32, statement for September 7.....	12,220 papers
Including above for September 14.....	13,106 "

Total first 2 issues in September.....

25,326 "

Average September issues, 12,663.

MOTOR AGE,

N. H. Van Sicklen

Manager.

An Important Announcement

Concerning Atwood Lamps

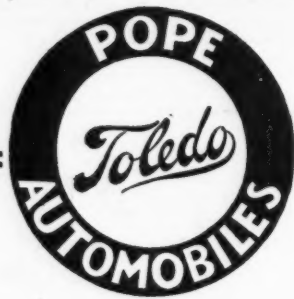
¶ We desire to direct attention to this extremely artistic product for 1906.

¶ Atwood Lamps have been designed especially to meet the very widespread demand for an artistic, well-proportioned, substantially-constructed light maker at moderate prices.

¶ "The power behind the throne," the name of our faithful generator, has surmounted all obstacles; besides we give you the benefit of our thirty years of Lamp experience which qualifies to serve your best interests.

If you are open to an Attractive Interesting Lamp Proposition Communicate With

ATWOOD MFG. CO.
AMESBURY, MASS.



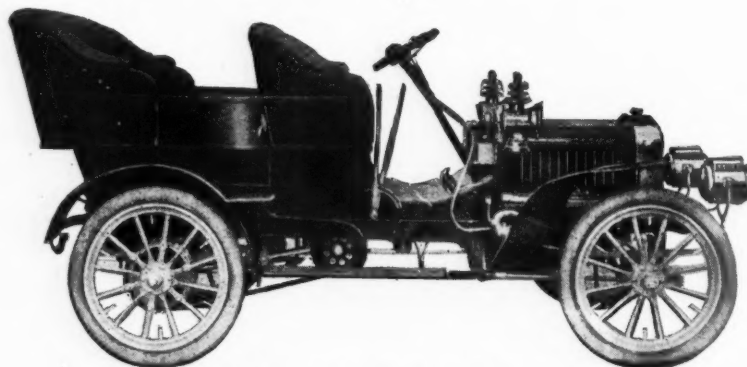
Pope = Toledo Victorious.

Wins FIRST PLACE over Ten Competitors

THE wonderful performance of our four-cylinder, double, outside, chain-driven car in the **Vanderbilt Elimination Trials** of September 23d, demonstrated anew the sterling qualities of this "Mile-a-minute" machine.

It takes a car of great reliability to cover 113½ miles, exclusive of stops, at the average rate of 58 miles an hour, traveling mile after mile at an unvarying speed.

We have the new Type X just finished and ready for delivery. It is a dependable car like all Pope-Toledos. Write for full information.



POPE TOLEDO, TYPE X, 20 H. P. \$2,800.

BE SURE the Name "POPE" is on your Automobile

POPE MOTOR CAR CO.

Toledo, Ohio

A. L. A. M.

The Thomas Flyer

In the Vanderbilt Cup Elimination Trials demonstrated Reliability, Speed and Endurance, making the third fastest round, all of which proves that the THOMAS FLYER

**Is a Well Balanced, Finely
Constructed Automobile**

which only time, facilities, and
experience can accomplish.

***We are ready to make early delivery
Write us to-day***

E. R. Thomas Motor Co.
Makers Thomas "Flyer" Automobiles

Members
A. L. A. M.

1202 Niagara St., BUFFALO, N. Y.

The Battle of the Tires

In automobilistic conversation or literature reference to the pneumatic tire recurs as frequently as does "The Last Rose of Summer" in the opera of "Martha."

There is an excellent reason for this: The tires are an essential feature of the automobile's economy. Although a marvelous creation of engineering skill, the automobile only became a practical reality when the pneumatic tire was invented. Without this device to absorb the shock caused by uneven road surface speeds of more than twenty-five kilometers an hour would be destructive to the machine and torture to the passengers. Thus far no effective substitute for the "pneu" has been discovered, although there's no end to efforts to find one. The latest candidate is Mr. J. C. Rutherford's iron tire, recently described in our columns.

In appearance it must be admitted this new tire seems better adapted to the ox chariot of a Merovingian king than for use in connection with an automobile of the twentieth century. That detail alone may prevent it from replacing the pneumatic tire in public favor. Certainly it would be difficult to devise a tire that in efficaciousness, relative durability and symmetry could compete successfully with the Continental. The quality of wares turned out by the famous Continental Co. has just been subjected to a searching test in the Paris-Trouville and Paris-Dieppe delivery services organized by our European edition, details of which have been related by cable in our columns. So far as the *Herald's* experiences go in this battle of the tires the honors are even. The Continental has won fresh laurels in this daily run against time from Paris to the sea.

The triumph is no empty one, for the strain imposed has been exceptionally severe and the result correspondingly conclusive. It is probable that automobile construction will derive more benefit from such a trial of endurance than from any amount of racing for international cups. One may reasonably question, in fact, whether practical good is ever achieved from the development of anything for purely sporting purposes. A race horse is virtually useless except for racing. The type of yacht developed in this country by the contests for the America's Cup has no value except as a racing machine, whereas seaworthy vessels with some provision for comfort are essential. Similarly, in automobilism speed races are probably less favorable to the evolution of a practical type of machine than are endurance trials such as those presented in the European edition of the *Herald's* daily service from Paris to the French watering places.

"It's not the 'unting that 'urts the 'orse; it's the 'ammer, 'ammer on the 'ard 'ighway." And "it's the 'ammer, 'ammer, 'ammer on the 'ard 'ighway," day after day, in every kind of weather—good, bad or indifferent—that reveals the defective features in an automobile.—Editorial, New York *Herald*, Aug. 19, 1905.

REMOVAL NOTICE



Situated on the highest point of ground in the State

The St. Louis Motor Car Co., makers of those deservedly popular and reliable

ST. LOUIS "RIGS THAT RUN"

has removed from St. Louis, Mo., to Peoria, Ill., where its factory facilities are seven times as great as in the old plant on Vandeventer Avenue, St. Louis

In St. Louis we had 16,000 sq. feet of floor space
In Peoria we have 105,050 " " "
YOU CAN FIGURE OUT THE DIFFERENCE YOURSELF

Agents who want to get in line for 1906—and all others—address hereafter

ST. LOUIS MOTOR CAR CO.
PROSPECT HEIGHTS...PEORIA, ILL.

Next year's output more than double this year's.
This will be good news to our agents.

First 4 of the 5

Qualifying for the

VANDERBILT RACE

Equipped with

Diamond Wrapped Tread Tires

Not one of these tires was touched in any way. The tire records of **all** cars using Diamonds (8 of the 10) were the same—Diamonds only make of tires in race which gave no trouble.

Not a Puncture Scarcely a Scratch

Like the unequalled performance of Diamond Wrapped Tread Tires in the Gordon-Bennett race, it points infallibly to the popular conclusion—

The World's Best Construction The World's Best Tires

The Diamond Rubber Co. AKRON, OHIO

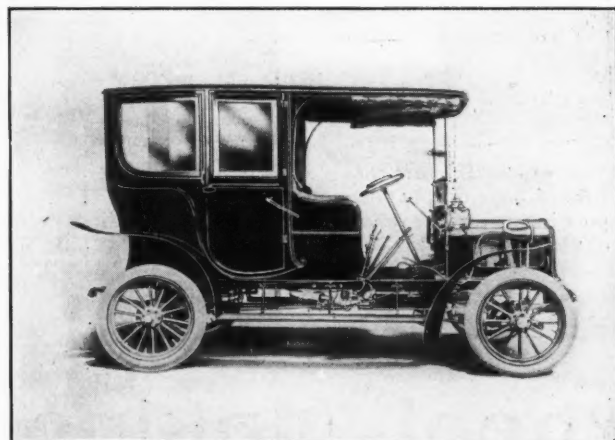
BRANCHES

NEW YORK.....	78 Reade Street
NEW YORK.....	1717 Broadway
BOSTON.....	174 Columbus Avenue
BUFFALO.....	715 Main St.
PHILADELPHIA.....	304-306 N. Broad Street
CHICAGO.....	1241 Michigan Avenue
CHICAGO.....	167-169 Lake Street
DETROIT.....	158 Jefferson Ave.
ST. LOUIS.....	3966 Olive Street
SAN FRANCISCO.....	608 Mission Street
MINNEAPOLIS.....	611 First Avenue S.
DENVER.....	1735 Arapahoe Street
CLEVELAND.....	323 Huron Street
ATLANTA.....	94 North Pryor Street

The Incomparable

WHITE

The Car for Service



THE WHITE LIMOUSINE

The quality of absolute noiselessness of operation is particularly desirable in a limousine because, in any car with a closed body, the noise made by the mechanism is much more noticeable and annoying than in an open vehicle.

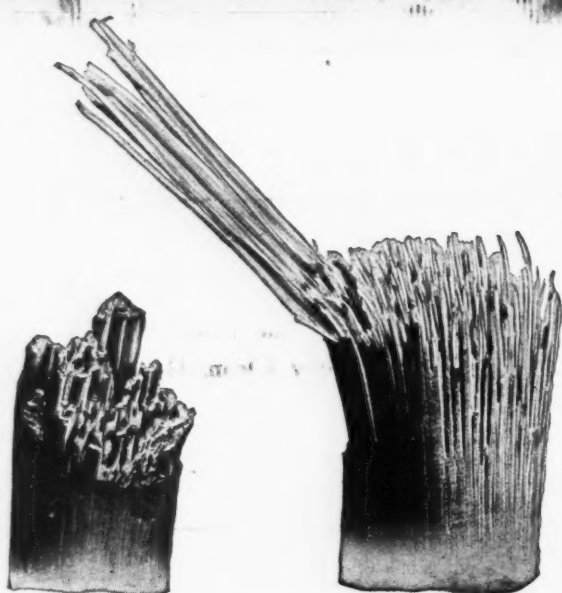
Another desirable feature of a limousine is that its speed respond instantly to the throttle, in order that it may be guided safely and speedily through the crowded city streets.

Both these qualities (inherent in the use of steam power) the White limousine possesses in unique degree. As regards the graceful lines and luxuriousness of equipment and finish, the White limousine must be seen to be appreciated.

WRITE FOR FURTHER DETAILS
REGARDING PRICE, Etc.

WHITE Sewing Machine **COMPANY**

Cleveland, Ohio



The "short" fracture shown above, while characteristic of poor oak, happens to show the fracture of poor hickory. The other fracture shows the quality of "Imperial" spokes.

Talks on Wheel Making No. 3

A bursted tire is robbed of its danger if the car is equipped with "Imperial" wheels.

It is a matter of life or death if a tire explosion is accompanied by a broken wheel. Mr. Edge says in effect:

"With the proper amount of nerve no driver is in danger from a tire explosion SO LONG AS THE WHEEL HOLDS."

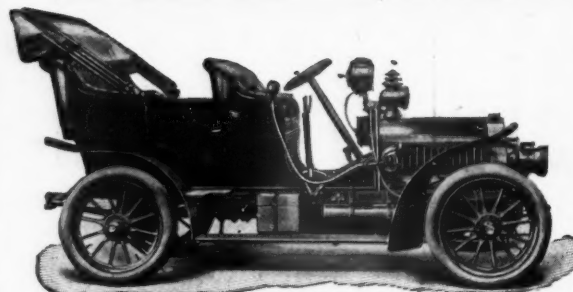
It is not uncommon for a wheel of inferior material to respond to a sudden side strain by parting with all the spokes at the hub, with a short grain and break such as is shown in one of the illustrations.

The excellence of "Imperial" wheels is based upon the perfection and refinement of orthodox methods.

**IMPERIAL WHEEL COMPANY
FLINT, MICH.**

Selling Agent .. HAYDEN EAMES .. Cleveland, Ohio

Cleveland THE CAR OF SIMPLICITY



The First Automobile Contest

in which a CLEVELAND CAR has ever been entered was held under the auspices of the Los Angeles (Cal.) Examiner, August 5. The run from Los Angeles to Santa Barbara, Cal.—110 miles—was through a very mountainous section of the country.

¶ There were fifty-eight cars entered, and the CLEVELAND CAR was one of the four cars that finished with a perfect score.

¶ The CLEVELAND—regular stock Car—carried four passengers, and was driven by the owner, Mr. Nat Myrick, who received a "first class certificate" from the committee.

¶ The performance of the CLEVELAND on this occasion was no greater than any CLEVELAND CAR is capable of.

¶ Demonstrations gladly given by appointment.

BRING AN EXPERT WITH YOU

¶ Our catalog contains full descriptive and illustrative details—Sent on request.

CLEVELAND MOTOR CAR CO.

380 Erie Street : : : : Cleveland, Ohio

General Eastern Distributing Agent:

E. B. GALLAHER : 141 W. 55th Street, New York

Distributors:

BOSTON: Butler Motor Car Co., 998 Boylston St.

CHICAGO: The Bennett-Bird Co., 1404-1406 Michigan Ave.

MILWAUKEE: E. W. Arbogast Motor Co.

SOUTHERN CALIFORNIA: Worthington Garage, Los Angeles.

Absolutely Safe, Perfectly Clean, Best to Ride, Most Economical to Keep. Always Satisfactory. A Carriage Any Lady Can Drive.

Chicago Agents: PARDEE-ULLMANN CO., 1218-20 Michigan Avenue, Chicago

KOKOMO, INDIANA, U. S. A.

"Firestone"

SIDE-WIRE TIRES

are used on nine-tenths of all the American made commercial vehicles manufactured. Why? Because manufacturers of commercial automobiles have learned by hard experience that the "Firestone" is the only tire that will withstand the hard knocks that are inseparable from commercial machines.

Firestone Tires wear like iron. They hold to the rim—they give satisfaction.

Then why not "Firestone?"

Firestone Tire & Rubber Co.
AKRON, OHIO

New York

Chicago

Philadelphia

Boston

St. Louis

San Francisco

Los Angeles



SEARCHLIGHT SWINDLERS

The success of the Rushmore Lens Mirror Searchlight has been so complete that as a matter of course the lantern makers have been compelled to either try to imitate it or go out of business.

A number of them have conspired to keep us out of the automobile shows, have claimed that we do not make the celebrated Rushmore Lens Mirror and that they get their cheap flat lenses from the same place, and have resorted to every contemptible trick to deceive people into buying their trash.

Certain so-called jobbers have tried to push the sale of the imitation lights by issuing lists of what are insinuated to be our prices in comparison with their alleged cheap prices. The statement that we ask the prices quoted is a deliberate and malicious

lie. The prices they offer are but a few cents lower than ours, while the fake lights they offer are by comparison not worth their weight as junk.

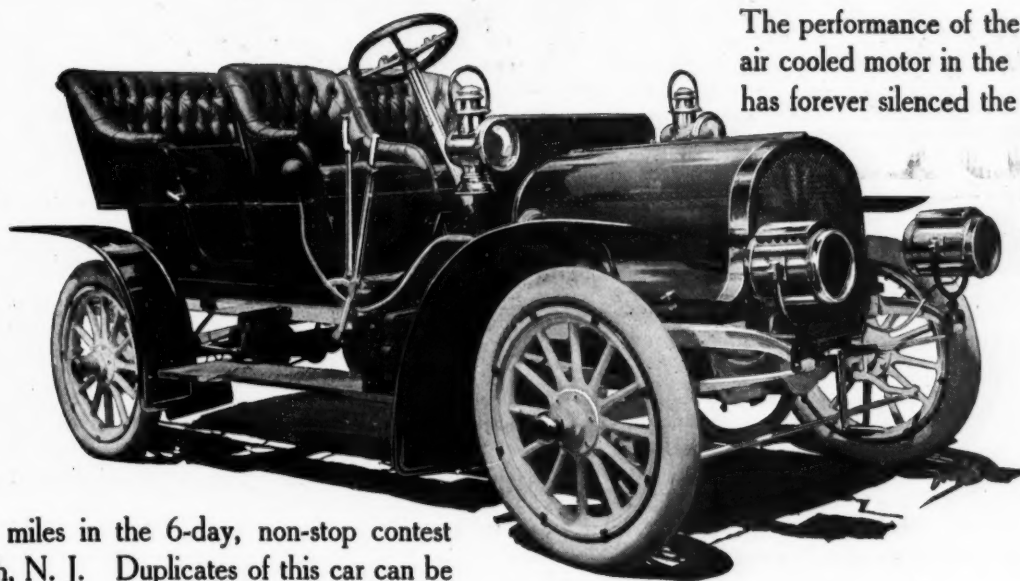
Some of the fake jobbers refuse to furnish the Rushmore light when requested to do so on the plea that we cannot make delivery. That statement is likewise a deliberate lie. They offer to refund your money if not as represented, but you had better hold on to your cash.

We do not ask any money in advance, but will send the Searchlight on ten days' free trial to anyone worthy of credit. The fake jobber can make but 25 per cent to 30 per cent on the Rushmore, while he clears 100 per cent to 200 per cent on the fake lights which he obtains on consignment. Do you wonder that he is willing to cheat you?

Our prices are the lowest for the quality and we ship from stock.

Rushmore Dynamo Works, - Plainfield, N. J.

CORBIN CARS



The performance of the Corbin 16 h. p. air cooled motor in the non-stop contest has forever silenced the opponents of

practical
air-cooling

A stock
16 h. p.
Model D

made 2,321.6 miles in the 6-day, non-stop contest at Long Branch, N. J. Duplicates of this car can be delivered promptly.

The Corbin Motor Vehicle Corporation NEW BRITAIN
CONNECTICUT

NEW YORK, 4 West 38th Street

BOSTON, 163 Columbus Avenue

PHILADELPHIA, 629 North Broad Street

DON'T EXPERIMENT

Just Sell

THE FORD

MR. AGENT:—Over 2,000 Automobile buyers decided during the past season not to experiment. They all bought "Fords." It is even more important for the retailer to *sell* a car of known merit than it is for the purchaser to *buy* one. The buyer only loses his *money*, but the Agent who sells a car not up to standard loses both *prestige* and *reputation*.

The success of the Ford Motor Co. is built on the success of the Ford Cars, and you know how great our success has been. Remember that people like to do business with successful firms, and a *car with a reputation is easier to sell than an unknown*.

You know the general rush to the Ford exhibit at the shows and how they all ask "What has Ford this year?," plainly indicating that automobile men look to Henry Ford for new ideas and originality of design.

We have a surprise or two up our sleeve this year—particulars about October 15th—nothing before—except that there is certainly good business ahead for the Ford agent in 1908, and it might be well to write us and see if we can give you the proposition and the territory you require.

FORD MOTOR CO.,

Member American Motor Car Manufacturers' Association, Chicago

Detroit, Mich.

Canadian Trade supplied by The Ford Motor Co., of Canada, Ltd., Walkerville, Ont.



THE Maxwell

PERFECTLY SIMPLE
SIMPLY
PERFECT

16 H. P. Touring Car \$1,400	8 H. P. Tourabout \$750
---	--

THE CAR that made a perfect score in the Glidden Tour—1,004 miles without a single adjustment. No car at less than twice the price made **AS GOOD** a record. No car **AT ANY PRICE** did better.

THE CAR that won a victory over all cars costing from one to two thousand dollars in the "Climb to the Clouds" at Mt. Washington. Unlike some contestants, we did not have to send three cars to get one up, but sent the **SAME** car up **THREE TIMES**.

THE CAR whose regular stock 8 H. P. Runabout type won the race at Long Branch August 19, making four miles in 5 min. 33 sec., and defeating cars listed at several times the price.

The automobile that has done these things **MUST** be worthy of your consideration. Look at as many cars as you please, but don't buy before seeing the Maxwell.

The agency field is filling fast. If you contemplate
applying for a Maxwell agency, better do it now.

MAXWELL-BRISCOE MOTOR CO.
TARRYTOWN, N. Y.

Central Western Representative: A. F. CHASE.	Members of American Motor Car Manufacturers' Association. Agents in principal cities.	New York Agents: MAXWELL-BRISCOE, INC.
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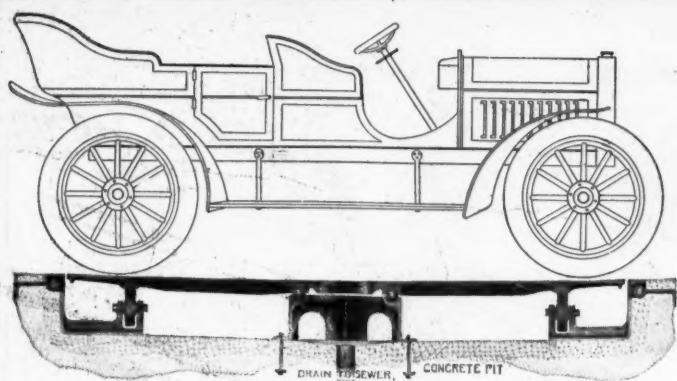
PENNSYLVANIA CLINCHER

The value of a Tire is measured not by dollars,
but by the Odometer.

The Tire which travels furthest without repairs is
the most valuable to YOU.

The Tire which carries your Car softly over the
road is the most valuable to your MOTOR.

PENNSYLVANIA RUBBER CO. JEANNETTE, PA.



THE AUTOMOBILE WASHSTAND-TURNTABLE

PATENT APPLIED FOR

It greatly increases the capacity of a garage by saving the space otherwise required for maneuvering cars. It also permits a car to always face the door thereby avoiding the inconvenience and danger of accident incident to backing it, when the approach is difficult.

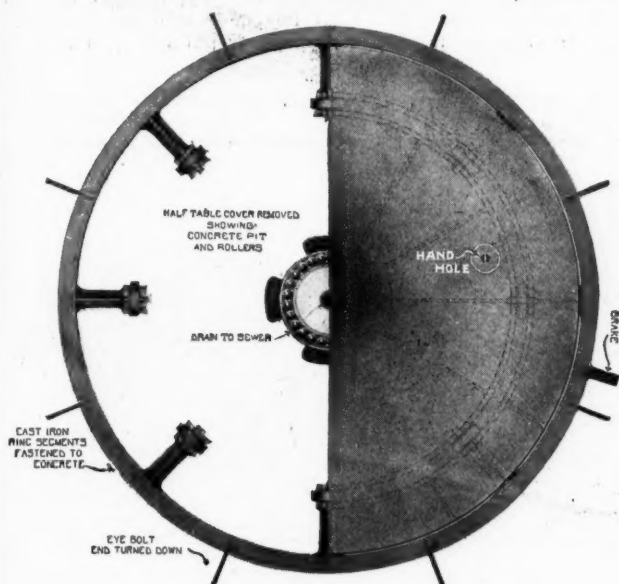
The Table is of cast-iron supported by a ball-bearing pedestal in center and rollers near its outer edge. It rests in a concrete pit about 12" deep, the edges of which are protected by an iron ring or curb as shown.

It moves easily, is practically indestructible and is absolutely fire-proof.

It greatly facilitates the washing of cars, all water from surface of table and garage floor passing to sewer through a drain-pipe in center of pit.

We make Washstand-Turntables and also plain turntables (without the washstand feature) for wheel bases up to 126 inches.

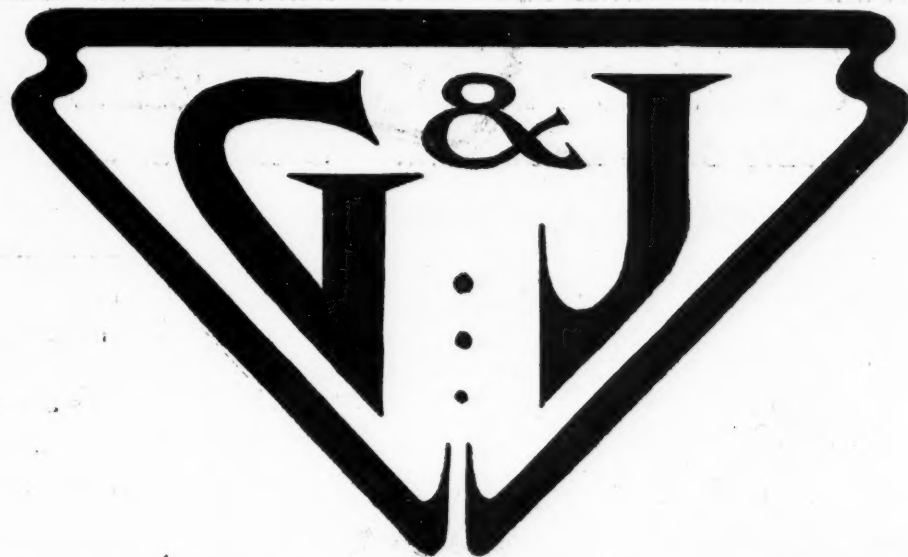
We will be pleased to send full descriptive matter and quote prices on request.



Sectional views of WASHSTAND-TURNTABLE.

Link-Belt Machinery Co.

CHICAGO



MOTOR CAR TIRES

ARE

RESILIENT, SPEEDY
ECONOMICAL, SAFE
EASY TO HANDLE

Get our new Tire Manual

G&J TIRE Co.

INDIANAPOLIS

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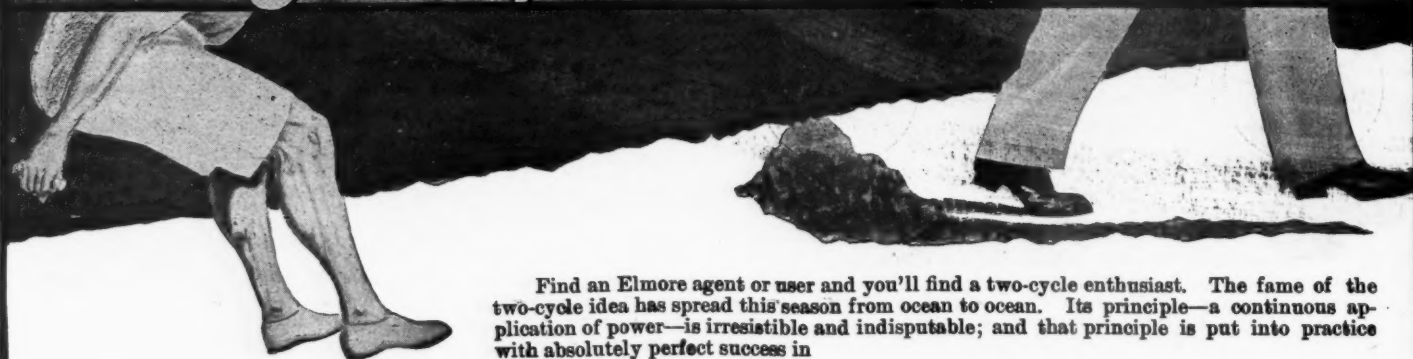
Detroit

Chicago

Denver

San Francisco

A Long Jump or Two Short Steps



Find an Elmore agent or user and you'll find a two-cycle enthusiast. The fame of the two-cycle idea has spread this season from ocean to ocean. Its principle—a continuous application of power—is irresistible and indisputable; and that principle is put into practice with absolutely perfect success in

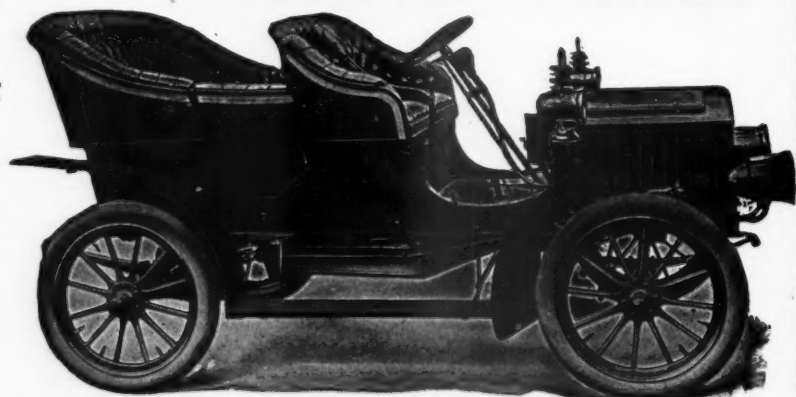
THE TWO-CYCLE ELMORE

Picture to yourself two men—one trying to cover the ground in long, hard jumps, the other forging ahead in quick, short steps. The first is the four-cycle—and bound to lose against the two-cycle with its even, steady gait. We have a book called "A Long Jump or Two Short Steps," which explains this in A B C style.

Better still, we have a record of victories in every test worthy of the name. Better still, we have the every-day testimony of thousands of users to which you can easily refer.

The Elmore two-cycle engine is no longer the "coming" engine—it is here. You'd better join the army of enthusiastic converts. Ask your agent or write to us.

Representatives: A. E. Ranney & Co., New York; Gawthrop & Wister, Philadelphia; Seneca Auto Co., Rochester; Young & Miller, Detroit; Hein & Casper, Milwaukee; W. W. Leathers Co., St. Louis; Lowry Mfg. Co., San Antonio; J. A. Rosesteel, Los Angeles.



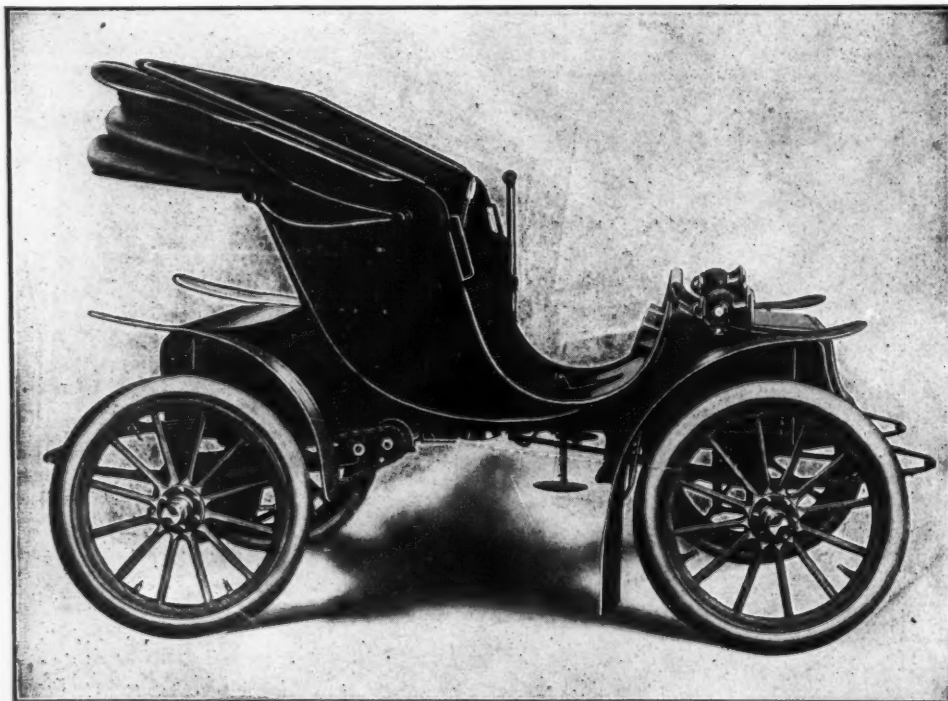
THE ELMORE MFG. CO.

2304 Amanda Street

CLYDE, OHIO

The Columbus Electric

Double Chain Drive Solid Rear Axle



75 Miles on One Charge

Weight 1,400 Pounds

Any Speed up to 20

Miles Per Hour :: ::

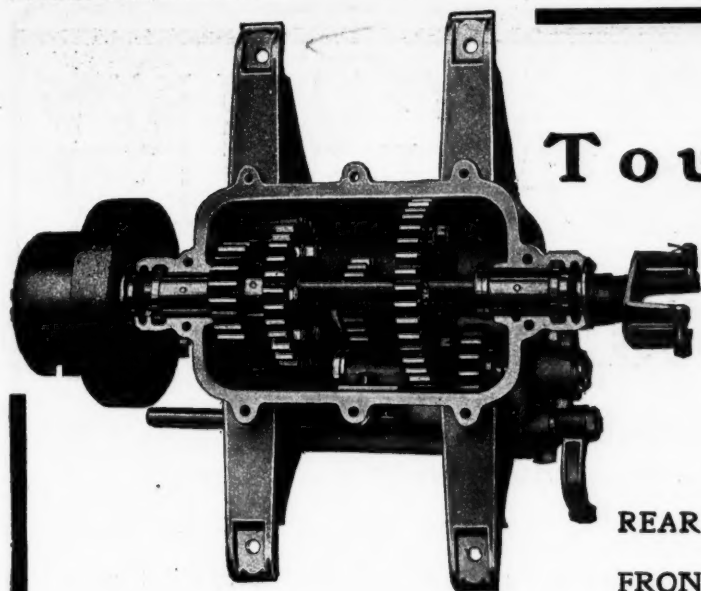
**NOISELESS
CLEAN**

**ODORLESS
SIMPLE**

**An Ideal Pleasure
Vehicle**

**FULL INFORMATION
SENT ON REQUEST**

The Columbus Buggy Co., Columbus, Ohio



Garford Touring Car Parts

The great problem of the hour for the automobile manufacturer is to develop the details of his engine. This study is so absorbing and important that the duty of producing axles and other parts has been left to other specialists.

Our specialty is the manufacture of parts for the very highest class of cars—parts that are as good as life insurance. We make:

REAR AXLE: Independent Shaft Drive, Ball or Plain Bearing, Weight Carried Entirely on Axle Tube.

FRONT AXLE: I-Beam Section Nickel Steel Bed, Ball or Plain Bearing

CHANGE GEAR

STEERING GEAR

CLUTCH

DISTANCE ROD AND BRACKET

PROPELLER SHAFT

LEVERS FOR EMERGENCY-BRAKE AND CHANGE-GEAR

Parts of one size are suitable for cars weighing up to 2400 lbs. and of 30 h. p.

Parts of the other size are suitable for cars weighing up to 2800 lbs. and of 50 h. p.

Write for
Circular No. 12

THE GARFORD COMPANY ... Elyria, Ohio

Sales Manager: **HAYDEN EAMES**, Cleveland, Ohio

MICHELIN

Manufacturers of large and small cars in their desire to market the best proposition naturally would use the best tires if they were cheap enough.

The Michelin tire is rated AAA1. The cost is more to start with, but 50 per cent cheaper in the end.

Compare and reflect and buy Michelin.

MICHELIN TIRE AMERICAN AGENCY, Inc.

6 West 29th Street, New York

Telephone, 4657 Madison

E. D. WINANS, General Manager

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CHICAGO, 1461 Michigan Boulevard.
BOSTON, 751 Boylston Street.
PHILADELPHIA, 322 No. Broad Street.
WASHINGTON, 1330 New York Ave., N. W.
SAN FRANCISCO, 307 Larkin St.
ROCHESTER, 21-29 Plymouth Ave.
ST. LOUIS, 3935 Olive Street.
BALTIMORE, 1020 Morton St.

MINNEAPOLIS, F. G. Winston, Jr., 709
Hennepin Ave.
CLEVELAND, 410 Erie St.
INDIANAPOLIS, Indiana Automobile Co.
ST. PAUL, C. P. Joy Auto Co.
CINCINNATI, 904 Broadway.
BUFFALO, 369 Pearl St.
PITTSBURG, 5903 Center Ave.

UTICA, 12-18 Lafayette St.
POUGHKEEPSIE, 14-20 Catherine St.
ALBANY, 97-101 Central Ave.
NEWARK, N. J., 286 Halsey St.
ASBURY PARK, Main St. and Sewall Ave.
MORRISTOWN, N. J., F. A. Trowbridge
Co., 17 South St.

GOODRICH AGAIN!

Another remarkable record made on—San Francisco to Los Angeles in 21 hours, and the return trip in 20 hours. No occasion to touch the tires—and the treads looking just like new. The advantages of the Integral Construction and Goodrich rubber on the treads are in evidence everywhere.

Goodrich Tires

THE WHITE SEWING MACHINE COMPANY

Office, 1878 Market Street

San Francisco, Cal., August 16, 1905.

Gorham Rubber Co., San Francisco, Cal.

Gentlemen: Replying to your letter making inquiry with reference to the tires used by Mr. George A. Hensley when he broke the San Francisco-Los Angeles records two weeks ago, beg to state that they were the regular stock Goodrich tires, 34x4 inches, and had been used before this trip for sixty days by Mr. Hensley, as they were the original ones that were on his car when he bought it, with the exception of one tire, which was changed before the start as a matter of precaution and a new Goodrich casing put on.

Mr. Hensley made the run in the remarkable lapse of time of 21 hours and 12 minutes from San Francisco to Los Angeles, and on the return trip his running time was 20 hours.

Since that time Mr. Hensley has run his car two weeks and up to date has never had occasion to use a pump on any of his tires, and the tread shows hardly a scratch. This is certainly remarkably good work for tires, and I congratulate both yourselves and the B. F. Goodrich Co. upon the uniform quality of the Goodrich tires we have received on the coast this year. Yours very truly, (Signed) C. H. HAWKINS, Manager.

The Bailey "Won't Slip" Tire. Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, slewing or skidding.

THE B. F. GOODRICH COMPANY,

AKRON, OHIO

New York, 66-68 Reade St.,
and 1625 Broadway.
Buffalo, 731 Main St.
San Francisco, 392 Mission St.

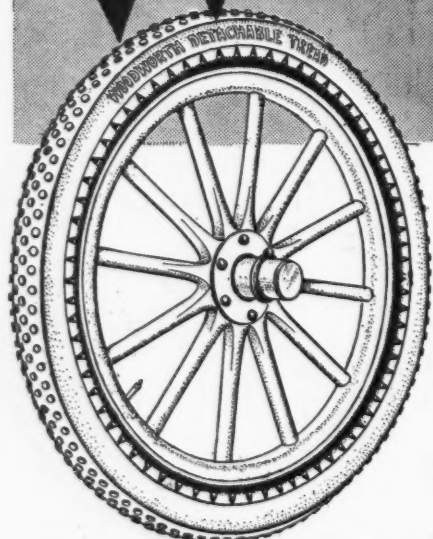
Chicago, 141 Lake St.
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Cleveland, 420 Superior St.

Detroit, 80 E. Congress St.
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Rims branded in the channel with this copyright mark have been inspected and pronounced perfect. We guarantee our tires only on rims so branded.

WOODWORTH DETACHABLE TREAD



FOR AUTOMOBILE TIRES
PREVENTS

SKIDDING, PUNCTURES AND WEAR OF TIRES

FAR AND AWAY THE BEST EVER INVENTED

It is made of a special crome tanned leather, absolutely uninjured by water. There are three ply of leather studded with steel studs on the part that comes in contact with the ground, and one ply on the sides, reaching around to within a short distance from the rim. The studs PREVENT SKIDDING ON SNOW, ICE OR WET AND MUDDY STREETS; they also make an excellent wearing surface, much more durable than plain leather or rubber.

The tread is held on the tire by adjustable side wires. It is lined with a fine all wool felt which makes a soft bed for the tire and prevents sand, gravel or dirt from getting under the leather. The tread is applied with the tire deflated; the side wires are placed in position, then the tire is inflated and is ready for use—NO CEMENT OR VULCANIZING. Tubes may be repaired without removing tread from the shoe. Full instructions for applying are sent with every pair of treads; any one who can repair a puncture can easily apply these treads. This is a tire tread no Automobilist can get along without. It eliminates the danger of wet pavements and enables the tourist to climb hills quickly and safely.

IT WILL PAY YOU TO SEND FOR FULL PARTICULARS AND PRICES

LEATHER TIRE GOODS CO., NEWTON UPPER FALLS, MASS.

SOLE MANUFACTURERS

SATISFACTION and the OLDSMOBILE

We have been telling you why the Oldsmobile is always safe under all circumstances and for any member of your family.

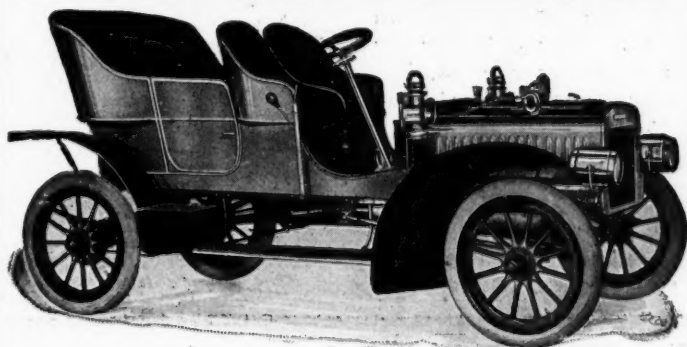
The same features have to do with the complete satisfaction every Oldsmobile owner gets from his machine---which, having been bought in the first place at a reasonable price, is found to be economical to maintain and thoroughly dependable in every part. Let us repeat the features:

TWO BRAKES	ANALYZED MATERIAL
LARGE PARTS	SEVERE CONSTRUCTION TESTS
STRONG SPRINGS	UNBREAKABLE STEERING CONNECTIONS
HEAVY SPINDLES AND WHEELS	SIMPLE OPERATION

We want especially to emphasize simplicity of operation. There are more ladies driving the Oldsmobile in this country than any other make of automobile. The clutches are easily handled. The control is free from complication, and the brakes are strongly connected and easily operated. If you will write us we will gladly set before you more of the convincing reasons as to the desirability of these cars. If you will call on our nearest sales agent, you can easily arrange for a demonstration. :: :: :: :: :: :: Send for Catalog 52.

OLDS MOTOR WORKS, MEMBER A.L.A.M. Lansing, Mich., U. S. A.

MOLINE



18-20 Horse Power

Model "B"—\$1,600

Four cylinder vertical motor that develops more than the rated H. P. Pulls through heavy roads and up hills in a way that surprises the owners of higher-priced cars. Has all the good features of most \$2,000 machines and costs \$1,600.

For the first time this season we can make immediate deliveries

We have only a few of them left and they will go quicklv. Perhaps our proposition might interest you.

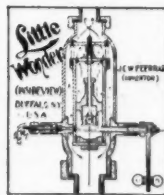
Model "D"—Our stock of these substantial 12 H. P. Touring Runabouts is decidedly limited. The price we are making is closing them out fast. If you want one, speak quick.

MOLINE AUTOMOBILE COMPANY
EAST MOLINE, ILLINOIS

PATENTS PENDING IN ALL COUNTRIES

The Little Wonder Carburetor Manufacturing Company

347 Franklin Street
BUFFALO, N. Y.



This carburetor will fit all classes of motors, from one-horse power up, and is especially adapted to automobile and marine engines.

The "Little Wonder" Carburetor, used in connection with our Hot Air



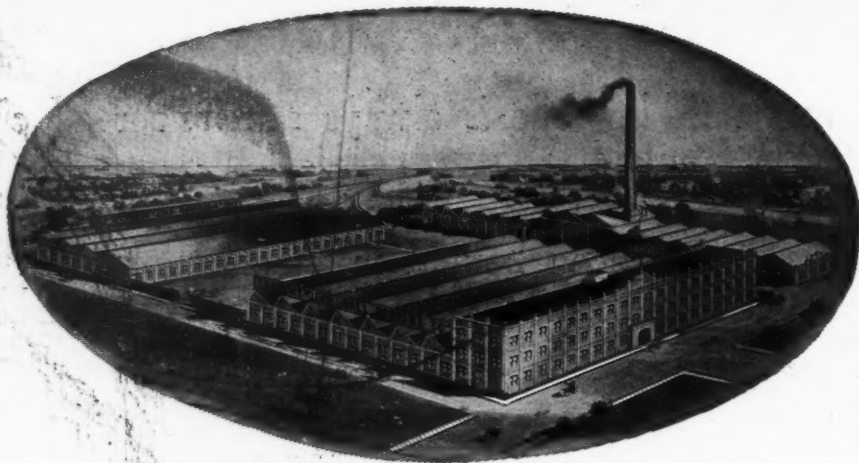
Generator on the exhaust pipe, is guaranteed to increase your horsepower from ten to twenty per cent, economizing in fuel consumption, giving a perfect mixture in quantity and quality at all engine speeds; it is 100 per cent safer than the float-feed carburetor, and is positively guaranteed not to ignite or explode, and is absolutely impervious to flame or back-firing.

The "Little Wonder" Carburetor is hot-air jacketed, as enclosed cut shows, thereby increasing the vaporization of the gasoline, and giving a hot gas mixture under all atmospheric conditions. Our Carburetor will not leak, freeze, flood or cause any trouble, as is the case with other carburetors now on the market. Our object in placing this carburetor on the market has been to supply the increasing demand for an entirely automatic, simple, reliable and absolutely fireproof form of carbureting device. That we have succeeded in our efforts has been thoroughly proved by the appreciation of the many users and advocates of the pump-feed type of carburetor. In the "Little Wonder" Carburetor the air as well as the gasoline can be regulated at will by the operator. Our Carburetor is so simple that anyone of ordinary mechanical ability may perfectly adjust and apply same to motor. Prices quoted upon application.

Generator, listed \$10.00 Carburetor, listed \$15.00

Ask for quotation and give diameter of exhaust pipe, 1 1/4" up. We build Gas Engines and Steam Engines; also Racing Machines for roadway and waterway, all combined in one. See cuts. Ask for prices on our Wheel Crank for pulling off and on wheels. Respectfully yours,

J. C. W. FEERRAR, General Manager and Owner.



The output of COMPLETE FRONT and REAR AUTOMOBILE AXLES of this plant exceeds the capacity of all competition combined.

THE AMERICAN BALL BEARING CO.

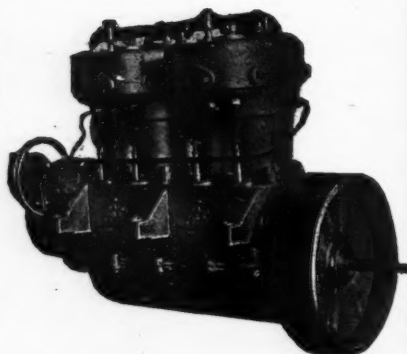
L. S. & M. S. Railway and Edgewater Park
CLEVELAND, OHIO, U. S. A.



BUY
KAESTNER
PRODUCT

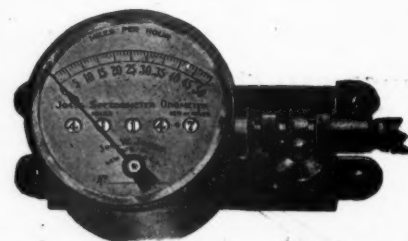
MOTORS

FOR
Automobiles
Boats
and
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Etc.



CHAS. KAESTNER MFG. CO.

SOUTH BEND, INDIANA



DISCHARGED

"In view of the positive means at the command of the defendant for the determination of his speed as opposed to the means used by the officer which involved the elements of judgment and guess work, the defendant is discharged."

The Jones Speedometer will protect you against unwarranted arrests. The Speedometer Tag is a still further protection.

Free to every Speedometer user.

Jones Speedometer

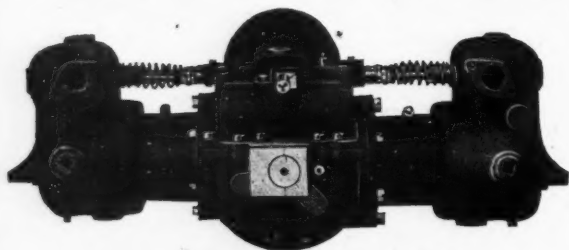
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Jos. W. Jones

121 West 23d Street, New York



"BEAVER MOTORS"



12-14 H. P. OPPOSED
16-18 " "
22-24 " VERTICAL

Maximum Power—Minimum Weight

All bearings and parts subject to strain of ample dimensions. Get particulars and prices for your 1906 cars

BEAVER MFG. CO., MILWAUKEE WISCONSIN

BRISCOE MFG CO.

OLDEST AND LARGEST
MAKERS
OF
AUTOMOBILE
RADIATORS

DURING the past season we sold 12,945 radiators to 54 bona fide motor car manufacturers among whom are nearly all of those who have produced high-grade and successful cars.

Over 30,000 of our radiators are now cooling automobile engines.

Our standard honey comb radiators are of true cellular construction, allowing cross circulation and accounting for their high-cooling efficiency per pound of weight of cooler.

The hit of the year 1905 in radiator design has been our flat tube construction with gang fins. We make special designs for every class of car from the light runabout to the heaviest truck or omnibus.

The finish on Briscoe fenders is unexcelled. 1906 styles on metal dashes, hoods and runabout boxes are prepared and we are daily booking contracts for next season's business.



By dealing with us you get the benefit of our long experience and the protection of the many patents we own, covering our methods of construction.

The Pierce Great Arrow car which won the Glidden trophy was equipped with a Briscoe radiator. Of the twelve American water-cooled gasoline cars which received first certificates at the end of the tour six of the radiators were made in our shops, four were made by the car builders, and only two were made by other radiator manufacturers. These facts are typical of our prestige.

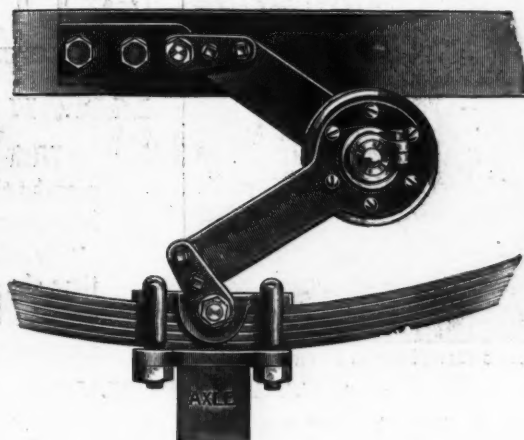
Our two large plants are ready to take care of our rapidly increasing business. We cannot only promise but make deliveries.

Write to our nearest office for estimates and get in line for 1906.

BRISCOE MFG CO.

DETROIT, MICH. and NEWARK, N. J.

Cars Under
1500 lbs.
\$40
(4 suspensions)



Cars Over
1500 lbs.
\$60
(4 suspensions)

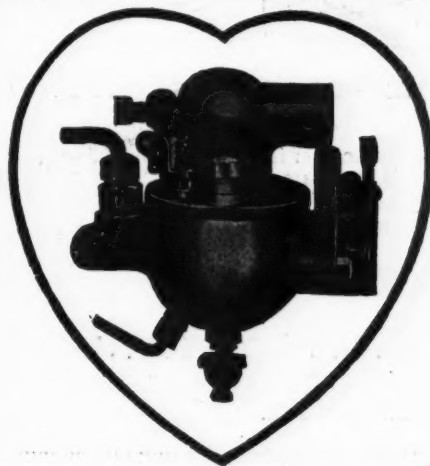
"The first four cars in the International race for the Gordon-Bennett cup at Auvergne were ALL equipped with the Hartford Suspension, and only 24 minutes separated them at the finish. The fifth car was one hour behind the leader and was NOT equipped with the Hartford Suspension. This victory over the picked cars of every nation, and run over the most difficult course in the world, is only one more proof of the practical qualities of this wonderful invention."

HARTFORD SUSPENSION CO.

Edward V. Hartford, President

69 Vestry St., New York City

THE
HEART



OF THE
AUTOMOBILE

The Schebler Carbureter

SIXTY-FIVE automobile and marine engine builders in the United States and Canada have adopted the Schebler. No other carbureter made in the world can show this record.

SCHEBLER SPECIAL for Cadillacs,	price, \$20.00
OLDSMOBILE CARBURETER	" 18.00
FORD, Two-cylinder,	" 18.00

Standard sizes will fit all other automobiles.
Agencies in all the principal cities of the world.

F. H. WHEELER Manufacturer and Sales Agent INDIANAPOLIS, IND.

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R. P. Bayley & Co., New Orleans, La.
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Los Angeles Automobile Co., Los Angeles, Cal.
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Mr. H. P. Hubbell, in his Adams-Farwell Car, in Forest Park, St. Louis

ADAMS-FARWELL

MR. HUBBELL WRITES AS FOLLOWS:

"With reference to the engine will say in the three and a half months that I have run it I have not had an accident, and have never been forced to send for assistance.

"My wife is able to go to our garage and take our car out at any time she cares to, and she experiences no difficulty in operating it, even in the streets where the electric cars and carriages are very numerous."

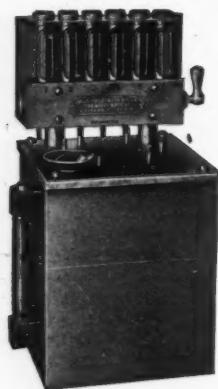
SIX MODELS

THE "REVOLVING MOTOR" CAR

SEND FOR CATALOG

THE ADAMS COMPANY, :: :: Dubuque, Iowa

HILL PRECISION OILERS



AN UNBROKEN RECORD OF SUCCESSES

The wise manufacturer is putting them on his 1906 cars.

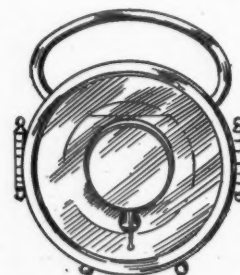
The wise buyers will insist on having them.

CATALOGUE FOR THE ASKING.

THE STEEL BALL COMPANY

837 Austin Avenue
CHICAGO, ILL.

The
absolute best in Motor Lamps



THIS SOLAR PARABOLENS HEADLIGHT

throws most powerful beam of any lamp made, yet burns cool. Simple, safe and sure, no better lamp can be built. The most your dealer will say about the next best is that it is "just as good as a SOLAR"—but why not buy the standard and dodge the second best?

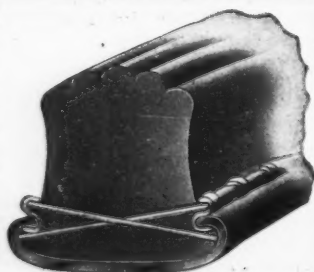
We stand back of every SOLAR lamp with a guarantee to you—a warranty that leaves no room for risk on the buyer's part. You can't buy better lamps—whether oil or acetylene.

Write for booklet—or ask your supply man.

BADGER BRASS MFG. CO.

KENOSHA, WIS.

New York Office, 11 Warren St.



Tire Fastener for Heavy Work

Save Time, Money and Trouble, and
Get MOST Work out of

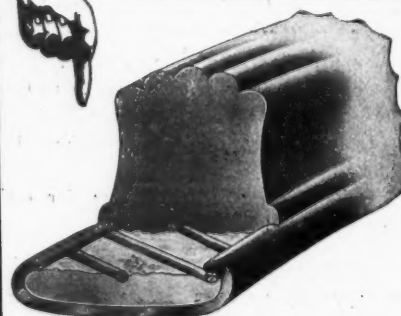
Motz Clincher Tires

Solid rubber or cushion types and made to fit any standard clincher rim in which pneumatic tires are used.

Resilient and "there with the wear"

The Motz Clincher Tire & Rubber Co.
AKRON OHIO, U. S. A.

OBSERVE
THE FASTENING
DEVICE



Tire Fastener for Ordinary Work



THE AUTO-METER

on a car tells the speed of travel and the distance traveled. It is absolutely accurate.

"Built Like a Chronometer."

When you are whirling along, a glance at the Auto-Meter before you, tells you **exactly** how fast you are going if your pace be as slow as a fraction of a mile or as fast as 60 miles an hour.

When a trip is finished, the Auto-Meter tells **exactly** how many miles you have gone on that trip.

When the season is over the Auto-Meter tells **exactly** how many miles you have covered during the season.

All this is worth while. Is it not?

Get acquainted with the Auto-Meter. It will lead to lasting friendship.

Write for catalogue and pamphlet, "Indisputable Evidence." The latter gives the interesting experiences of many prominent automobile owners.

WARNER INSTRUMENT CO., 55 Roosevelt Ave., Beloit, Wis.

Warner Instrument Co., 143 Federal St., Boston, Mass. Warner Instrument Co., 1691 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

Latest European Novelties

Racing Car No. 13878

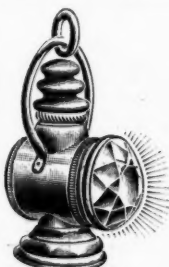
We are now importing a complete line of Mechanical Automobiles, including side entrance and rear entrance Touring Cars, Runabouts, Racing Cars, etc., which are mechanically operated with clock work and spring. Catalog mailed on request.



Automobile Jewelry

We are now handling a line of Automobile Jewelry, consisting of watch charms, watch fobs, ladies' hat pins; in sterling silver and rolled gold plate, designed and copied from automobiles and automobile parts, such as lamps, horns, wheels, etc.

Catalog mailed on request.



No. 5361. Full Size.

Charles E. Miller

Manufacturer, Jobber,
Exporter and Importer

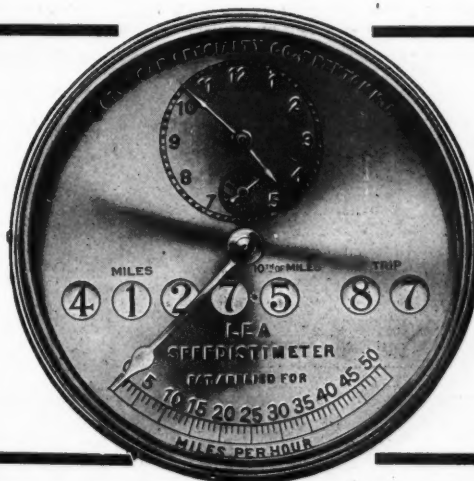
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Bureau of information



The Lea "Speedistimeter"

tells the speed, distance and time of day

Fastens on dashboard and figures are plainly read from the seat. Enclosed in water-proof brass case.

Write for booklet B and proposition to agents.

William S. Jones

Sole Selling Agent for Motor
Car Specialty Co., Trenton, N. J.

112 North Broad Street

Philadelphia

Have you seen the new **KOKOMO** Mechanically - Attached AUTOMOBILE TIRE ?

**It is just what you
Have been looking for**

Quickly attached and detached.
Creeping and Rim Cutting entirely avoided.
Made of the very best material and workmanship
throughout.
Write us for full particulars.

Kokomo Rubber Co., Kokomo, Ind.



DANGER AHEAD!

Light Across the Continent
All your light troubles on a long tour are eliminated by the

PREST-O-LITE GAS TANK

No generators could ever have stood this test.

DETROIT, MICH., Aug. 3, 1905.

The Concentrated Acetylene Co.,
Gentlemen: It gives me pleasure to send you a recommendation of your Gas Tank, as it is far ahead of anything I have ever used. It does away with the trouble of carrying carbide and continually refilling your tank, but is always ready at a moment's notice.

We put on one of your tanks in New York, that was charged to 350 pounds, and drove to Cheyenne before changing tanks, and it would not have been necessary then, as we still had 150 pounds registered on our gauge glass.

There were several days at a time that our tank was so covered with mud that you could not tell what it was; but the mud and severe shaking up never affected it in the least. I shall never use anything else, and would gladly recommend it to all.

D. B. HUSS,
Driver of OLD SCOUT in the Oldsmobile Trans-Continental Race.

To be had of all dealers. Empty tank exchanged for full one by any dealer.

PREST-O-LITE COMPANY
AGENTS IN ALL CITIES INDIANAPOLIS

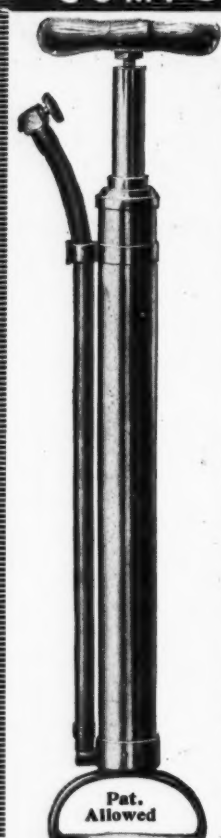
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Recharging Tank f. o. b. Indianapolis **\$2**



IMPERIAL WIXON
COMPOUND AIR PUMP



IN a recent test of 8 tire pumps the IMPERIAL-WIXON produced 64 lbs pressure in an Automobile Tire, in 100 strokes from 0.

Of the other 7 pumps
2 produced 23 lbs.,
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1 41 lbs., 1 45 lbs.,
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MORAL: If you pump for exercise any pump will do, but if you want quick and easy pumping use an IMPERIAL-WIXON DOUBLE CYLINDER, DOUBLE ACTION. Price \$5.00 each. Sent on trial.

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FOR SALE BY ALL DEALERS

Pat. Allowed

"20TH CENTURY SOAP"

One Pound Can 10c

3 1/2 Pound Pail 25c

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Invaluable for ALL Cleaning Purposes About a Garage

Nothing can compare with it for cleaning and polishing the highly finished surfaces of an automobile

CONTAINS NO LYE. Made of Strictly Pure Vegetable Oils.

ABSOLUTELY A PURE SOAP

The Pure Oils of which it is made are beneficial to the skin, and keep the hands in good condition.

TRY IT TO-DAY

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Or in Barrels

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MADE ENTIRELY OF STEEL

Protects your car and your property.
Affords a SAFE and HANDY place in which to keep your automobile, SUMMER and WINTER, when not in use.
DOES NOT CONFLICT WITH FIRE ORDINANCES.
DOES NOT BECOME A PART OF THE REAL ESTATE.
Easily erected by unskilled labor and can be moved as often as desired.
By keeping your car at home instead of at a garage (more or less distant from your residence), you are assured that no unauthorized person uses your car, unknown to you.
We make all styles and sizes. Send for catalogue of prices, illustrations and complete particulars. Address

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Locomobile

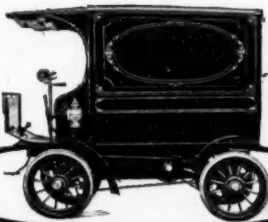
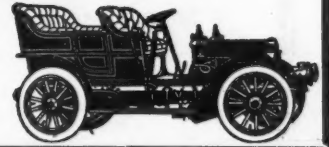


The *Locomobile* Company of America, Bridgeport, Conn.

Member Association Licensed Automobile Manufacturers.

NEW YORK, Broadway and 76th St.
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There is no disputing this fact. *It is incontestable.* Their record shows it. No other commercial car has ever accomplished what Knox Cars have in the way of transportation of merchandise, 365 days in a year.

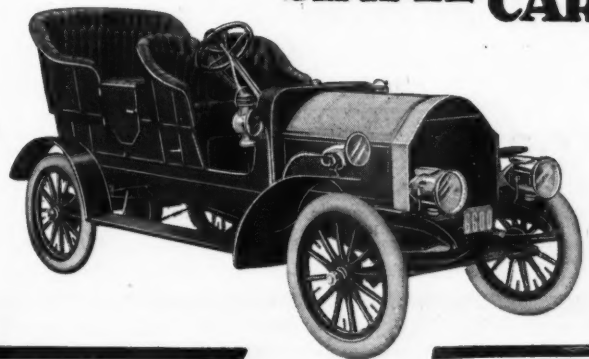
The Knox system does it. In mechanics, the most scientific; in service, the most practical. It has been proved beyond peradventure that Knox Cars represent the quickest, the best and the most economical method of local delivery. Send to us for evidence of it, or get it at agents.

Agents in all Principal Cities.

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Largest and Oldest Manufacturers Gasoline Commercial Cars
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Built by Skilled Workmen from the best Materials Obtainable

The Simplest Gasolene Car in the World
—both as to construction and control, and the easiest to operate and maintain.

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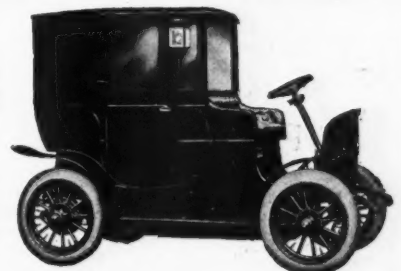
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NEW MODELS NOW READY

The cut shows the new Columbia Electric Brougham, Mark LXVIII, with Lightened Construction, Pneumatic Tires, 5-Speed Control, Special Exide Battery and other improvements.

With same Chassis we supply Landaulet, Hansom and Victoria Bodies.

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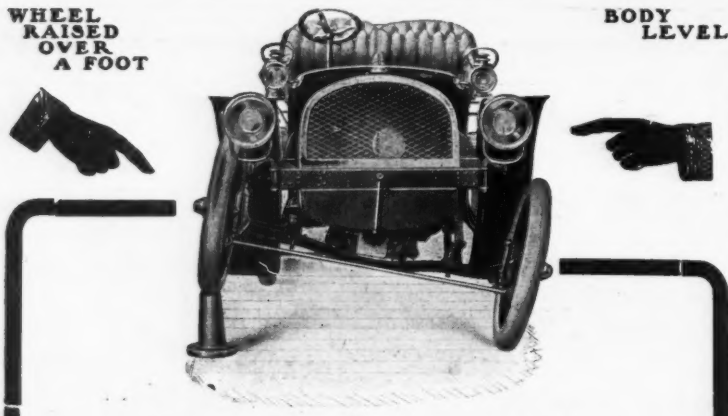
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Members Association
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Hartford, Conn.

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Chicago Branch: 1413 Michigan Ave.

Washington: Washington E. V. Transportation Co., 15th St. and Ohio Ave.
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RAISED
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A FOOTBODY
LEVEL**REAL COMFORT ON ROUGH ROADS**

It isn't enough to say "this car goes anywhere." So does a log-wagon; that doesn't mean that you would want to ride on it.

THE MARMON**"A Mechanical Masterpiece"**

Is the **only** car that is **not** built on the unyielding principles of a log-wagon. The flexibility of its running gear is such that, over the roughest roads, its mechanism is always in alignment, free from binding and twisting strains. It can be run at any speed over rough roads with a freedom from jar, jolt or vibration—a very luxury of motion—that is unknown in any other car, all due to an exclusive patented Marmon feature.

Double Three-Point Suspension

Cast aluminum body on one frame, power plant on another frame, each frame suspended on three **pivotal** points. Eliminates the constant strain inevitable in the rigid suspension of all other cars, and means greater efficiency and **less wear on all parts**, tires included. This and other features of apparent superiority are fully described in Booklet No. 1. Yours for the asking.

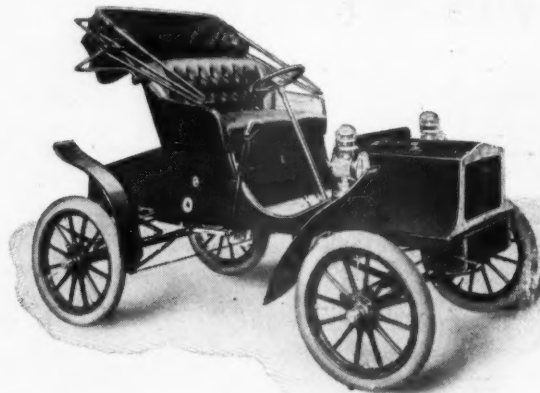
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(Established 1851)

Indiana

Members American Motor Car Manufacturers' Association, Chicago.

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DEALERS****THE GALE \$500**

Model A

Will be a genuine sensation in 1906

Every Up-and-Doing Dealer knows the value of handling **A GOOD CAR** at a low price. **THE GALE** stands alone in its class.

By all means get our proposition to dealers for 1906 ... It will interest you **SURE**. Address

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Manufacturers having just bought a large commercial motor vehicle works are extending operations and want

**CAPABLE
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FOR EASTERN
TERRITORY**

Also want suitable

PARTY TO GO ABROAD

Must become financially identified with the business.

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CARE OF MOTOR AGE, CHICAGO

NO EXCESS FARE

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When planning a business or pleasure trip from Chicago to Buffalo, New York, Boston or any Eastern point, you should investigate the satisfactory service afforded by any of the three express trains operated by the Nickel Plate Road. Colored porters are in charge of coaches, whose duties are to look after the comfort of passengers while en route. Special attention shown ladies and children, as well as elderly people, traveling alone. No excess fare charged on any train on the Nickel Plate Road. American Club meals, from 35 cents to \$1, served in Nickel Plate dining cars. One trial will result to your satisfaction. All trains leave from La Salle Street Station, only depot in Chicago on the elevated railroad loop. Call on or address John Y. Calahan, general agent, 113 Adams street, room 298, Chicago.

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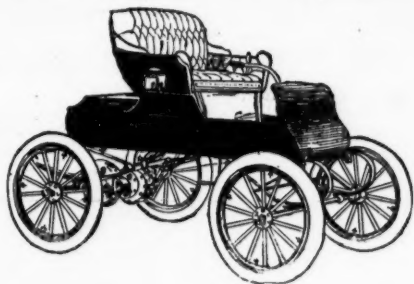
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National
Model C.
24-30 H. P.
4 cyl., 4 $\frac{1}{2}$ x5

A touring car decidedly in advance of the times.
A type of car that will be extensively copied in the near future.
Ample power and speed, perfect control.
All working parts simply arranged and remarkably accessible

National
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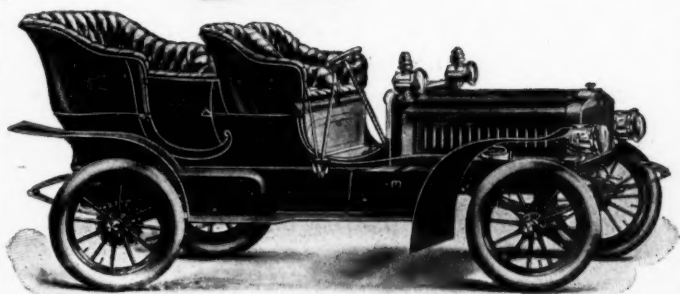
One of several handy little electric cars which are unsurpassed for convenience and comfort. Write for our catalogues.

NATIONAL MOTOR VEHICLE CO.

Members American Motor Car Manufacturers' Association, Chicago.

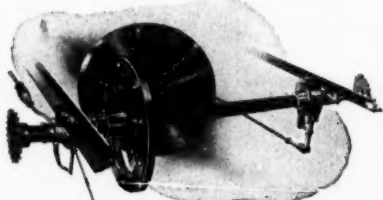
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Model 7. 28-32 h. p., \$2,000

A 16 h. p. Runabout



Our Noiseless Transmission

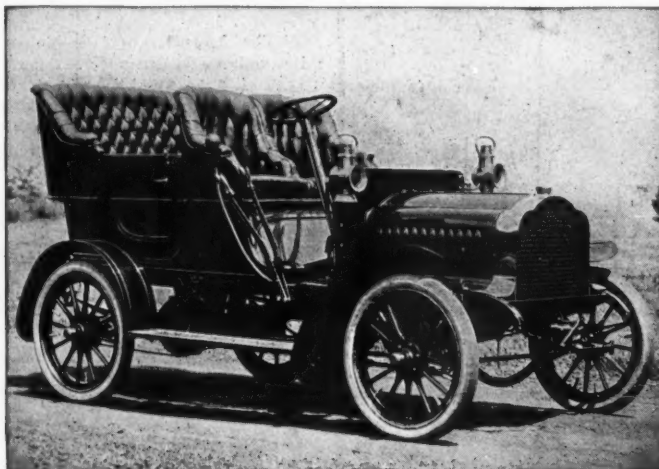
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Model Four, \$1,400

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Yours respectfully,

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THE E. H. V. CO.

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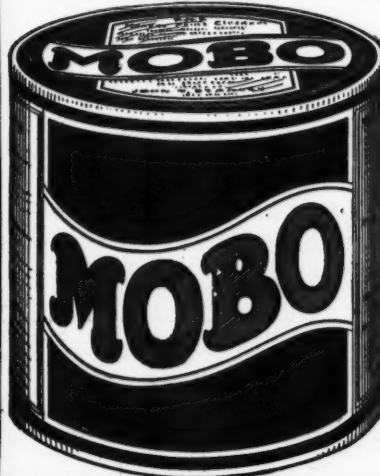
The Care of the Car

Washing the body of the machine, keeping the polished surface free from lubricator, road dust and gutter muck is just as essential to the life of an Automobile, as is the attention given the running gear.

Mobo, the new cleanser for Automobiles, will easily and quickly remove grease, dirt and grime and all traces of a hard run, without dulling or scratching the highly polished surface.

MOBO

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TELLS THE SPEED OF TRAVEL

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Tells both with absolute accuracy

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The **Trip Dial** records the distance traveled on a trip or for a day.

The **Season Dial** records the total distance covered in a season.

There is satisfaction in knowing how fast your car is traveling, satisfaction in knowing how far it has traveled.

You enjoy this double satisfaction with an Auto-Meter on your car. Some one of your friends surely has one. Ask him about it.

In the meanwhile let us send you a catalogue and interesting pamphlet, "Indisputable Evidence."

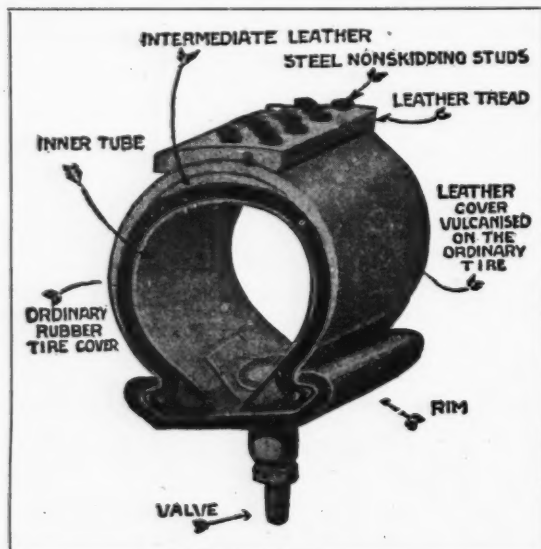
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From us are up
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Special Shop Work

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STORAGE BATTERIES

ARE OPERATING ELECTRIC
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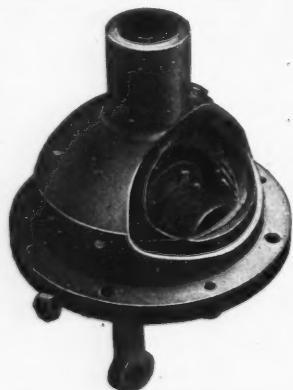
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**IRREVERSIBLE STEERING
BEVEL AND CHAIN DRIVE DIFFERENTIAL
MANY SIZES AND MODELS
SLIDING GEAR TRANSMISSION**

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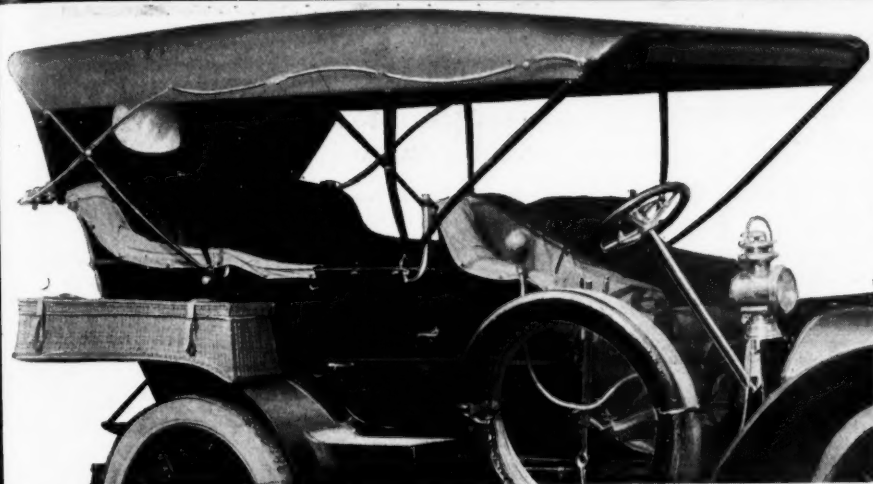
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Should be just as carefully designed and fitted as any other parts of the car. **"ANY OLD TOP" won't do.** Equip with the **LONDON TOP** and secure the best that skilled top makers and the best of materials can produce.

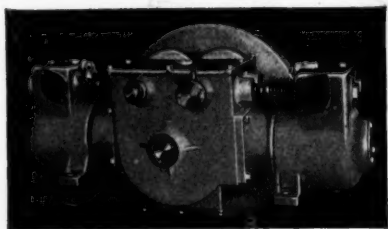
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AUTOMOBILE
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**GUARANTEED
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VERY TOUGH AND HARD.

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Owners of automobiles or launches who use the **Apple Automatic Sparker** have no trouble with weak storage batteries or ignition faults of any kind.

With the **Apple Automatic Sparker** you can keep your storage batteries always charged and ready to give a strong, steady spark at all times. It is far ahead of any European Dynamo. Besides this, the **Apple Automatic Sparker** gives double service by giving ample power for three electric lights whether the engine is running or standing still.

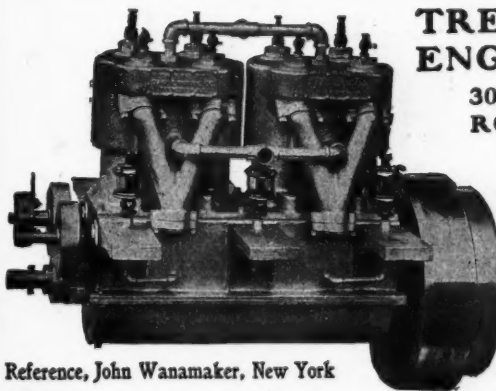
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4 Volt, 60 Amp. hours
9½x3½x8½, Price \$18.00

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POSITIVE CONTROL—STARTING AND STOPPING ABSOLUTELY RELIABLE—GOING AND COMING

Without flourishes or fads Acme Motor Cars are the most widely developed and thoroughly practical made.

Are simplest in construction and easily accessible at any working point.

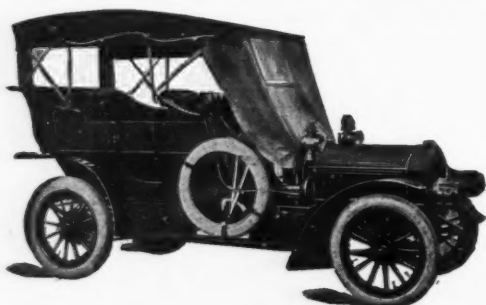
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FORGET IT AND USE
WEED'S TIRE GRIPS.
POSITIVELY STOPS SLIPPING OR SKIDDING.
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WEED CHAIN TIRE GRIP CO.
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"FIRST AID TO AUTOMOBILES"

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The insulating surface of the



Spark Plug is so great that no possible deposit of carbon can make it short circuit.

"The Spark Always Jumps."

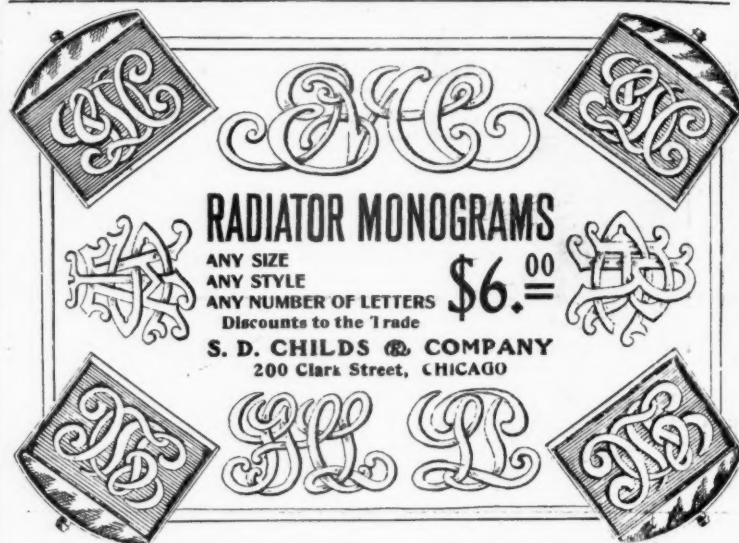
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Price \$2 by mail postpaid or at your dealer's.

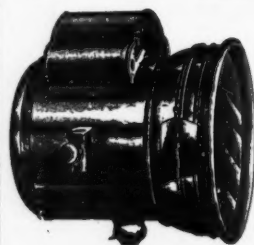
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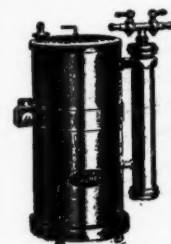


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With Adjustable Burners

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Generator No. 2—Capacity 32 oz. Will supply from one to four Burners. Equipped with a Condenser.

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WE MAKE ANYTHING TO YOUR OWN DESIGN IN QUANTITIES

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Model E. 30 H. P. Glide, Vertical Four
Cylinder Motor

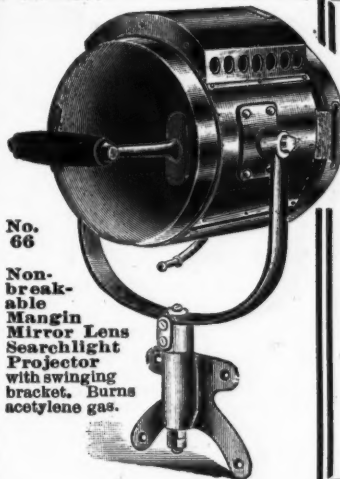
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Model E is a 30 H. P. vertical four cylinder car with bevel gear drive.

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Non-breakable Mangin Mirror Lens Searchlight Projector with swinging bracket. Burns acetylene gas.

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TRADE MARK

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stands the constant jarring of rough roads without rattling or coming apart. The gas made by the new Neverout

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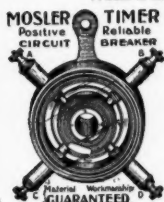
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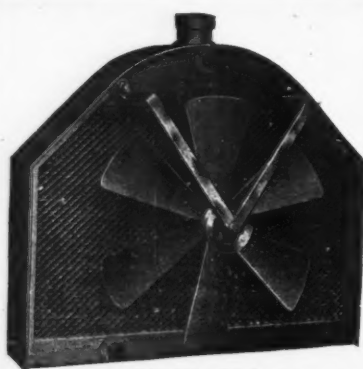
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Send ten cents for catalog. Free to dealers.

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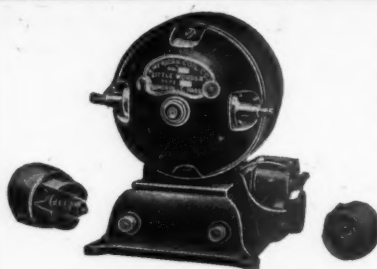
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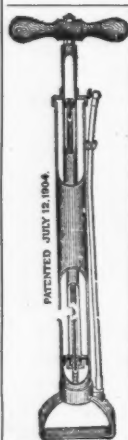
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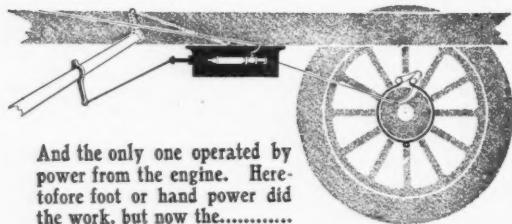
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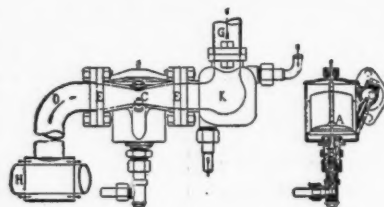
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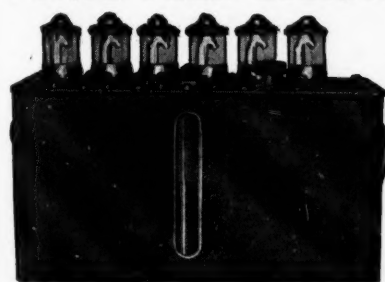
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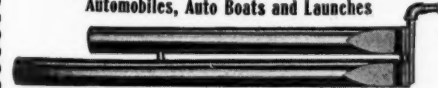
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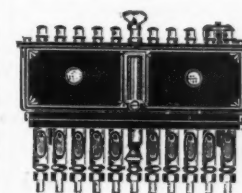
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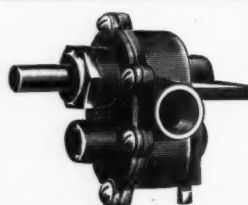
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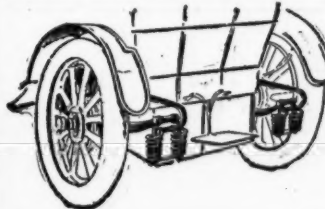
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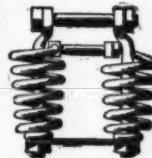
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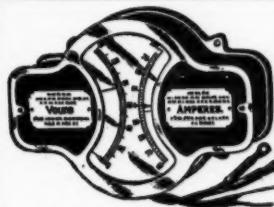


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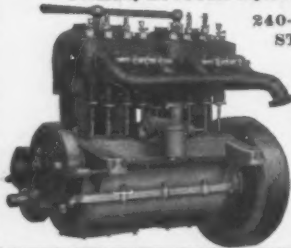
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28x3	22.80	4.64
30x3	24.40	4.96
30x3 1/2	31.69	7.04
32x3 1/2	33.75	7.52
32x4	38.93	9.09

We can supply other sizes at proportionate prices.

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My 1905 White Steamer, equipped with water-proof cape top; Continental headlights; naval type Rushmore searchlight; Prestolite gas tank; three oil lamps; speed meter and odometer combined; grade meter; air brakes; improved emergency brakes and Gabriel horn.

In addition to the above extra equipment my car has an improved pilot light and water tank, and has been strengthened and changed in parts with a view to safety and absolute reliability.

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Special rates for continuous advertising in these columns upon application.

FOR SALE—1904 Winton touring car with top, 2 headlights, baskets, etc.; car in perfect condition; in need of money and will sacrifice for \$900. A. W. Granger, Grand Hotel, Cincinnati, O.

FOR SALE—Reading-Duryea phaeton, with top; reason, ill health; \$550. T. E. Welsh, 25 N. Main, Pittston, Pa.

FOR SALE OR EXCHANGE—Steam racing car, 40 horsepower; 36-inch wheels in perfect condition; speed, mile in less than a minute on straight away. Held world's record for nine months, making a mile in 1:09 on mile track. Can use small car. John Howard, 109 N. Broad St., Trenton, N. J.

CHICAGO School of Motoring, the original automobile school in Chicago. One hundred and eighty graduates the past year, to whom we refer upon request. Automobile owners, prospective buyers and young men wanting to become expert chauffeurs will save a great deal of money and a lot of worry by studying the mechanism, care and repair of gasoline automobiles, in our shop, where all parts are open so you can see how they are made and how they operate. We give thorough and practical instruction. Competent chauffeurs supplied. Chicago School of Motoring, 264 Michigan Ave. Phone Har. 119.

WANTED—A good second-hand or demonstrating car; in first-class condition. Prefer Cadillac model "B" or "F" 1905, or a light tonneau car of standard make. Chas. H. Wise, Lohrville, Ia.

WANTED—Light touring car; good order; priced right. Franklin preferred. Lock 132, Newport, Ind.

FOR SALE—A1 steam engine; 7 1/2 H. P. Macon, complete plant. Wide tread, roller bearing runabout; new tires; no power. G. R. Warren, Slattington, Pa.

FOR SALE—White Steamer in good condition. First check for \$750 takes same. Address R. A. R., care MOTOR AGE.

FOR SALE—Baker electric runabout. Price \$275. With new batteries. Address R. A., care MOTOR AGE.

FOR SALE—Haynes-Apperson, Model M, 20 H. P., double opposed engine, 5-passenger car. Purchased July, 1905. Has sparker on wheel and all the 1906 improvements. Guaranteed in A1 condition. Will demonstrate any length of time and condition to prove it. J. F. Ross, Louisville Hotel, Louisville, Ky.

FOR SALE OR TRADE—Fine Ford runabout, 1905, 10 H. P., silent and speedy. A \$900 outfit in fine shape. Can furnish tonneau if desired. Will sacrifice. Also have others. Address Patton & Ayers, Mt. Vernon, Ill.

WANTED—Position as repairman in garage by experienced man who now has charge of garage. Address F. J. W., care MOTOR AGE.

FOR SALE—Last year's Ford. Canopy top, lamps, horn, odometer, extra tire and hampers; good condition; guaranteed perfect working order. J. O. Ohler, Lima, O.

FOR SALE—Haynes-Apperson, 1904, light touring car. Make offer. Bought late; used very little. Dr. Wm. M. Stith, Petersburg, Va.

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DEMONSTRATING cars at low prices. '05 Model F Knox touring car, glass front, top, etc., run less than 1,200 miles, \$1,500. '05 Elmore touring car, top, etc., run only 500 miles, \$1,000. '05 Stanley surrey, fine condition, \$750. '05 3-cylinder Cameron runabout, good as new, \$500. '04 Stevens-Duryea, \$700. Lowell Auto. Corp., Appleton St., Lowell, Mass.

FOR SALE—1904 Indian motorcycle, perfect order, \$125. Lock Box No. 97, Muskegon, Mich.

WILL EXCHANGE 16 H. P. car, O. K., for runabout Rambler. Olds or Orient preferred. Lock Drawer 189, Hawarden, Ia.

FOR SALE—\$350. Rambler runabout. Perfect condition; tires sound; odometer; extra tubes. C. P. Taylor, Norwalk, Conn.

FOR SALE—1905, 20 H. P. car. Cost \$1,700; will sell for \$1,150. Guaranteed O. K. Address X. Y., MOTOR AGE.

FOR TRADE—A new \$500 Schiller piano for runabout, Mitchell preferred. Schiller Piano Co., No. 823 Francis St., St. Joseph, Mo.

FOR SALE—Locomobile steamer, perfect condition, \$175; 2 Model "E" Ramblers, good condition, \$225-\$300; 2 12 h. p. double cylinder Elmore, detachable tonneau seats, \$250-\$450; 1 machine with 7 h. p. Oldsmobile engine, great bargain, \$125; 20 h. p. Phelps, 3 cylinders, \$500; Model "E" Rambler with wheel steering, run less than 150 miles, \$425; 1903 Winton, 20 h. p., with tonneau, \$900; 10 h. p. Ford runabout, \$375. E. S. Youse, Reading, Pa.

FOR SALE—Stoddard-Dayton with full equipment of top, lamps, glass front, etc. Cost three months ago, \$2,400; now \$1,700. McDuffee Auto. Co., 1449 Mich. Ave., Chicago.

FOR SALE—Winton "C;" thoroughly overhauled; perfect running order; five lamps, generator and extra tires; \$1,500. Leo Baldauf, Oskaloosa, Iowa.

FOR SALE—Model E Rambler runabout, in first-class order; or will trade for electric machine. Address F. W. P., care MOTOR AGE.

FOR SALE—40 horsepower, 1905, up-to-date Thomas Flyer. Used for demonstrating purposes. Very best condition. A bargain. C. A. Coey & Co., 1323-1325 Michigan Ave., Chicago.

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FOR SALE—1903 Winton, A1 condition, \$675, cash. F. M. Homer, 47 W. Randolph St., Chicago.

WILL TRADE—Good steam auto in A1 shape for Orient buckboard. Address C., care MOTOR AGE.

FOR SALE—Reo touring car; run 6 weeks; with all equipments cost \$1,450. Price, \$950. Address L. P. Shawe, 25 Brighton St., Providence, R. I.

FOR SALE—National electric stanhope, in good condition; reason for selling, have bought larger car; a great bargain. For details address Dr. C. Hoyt, Chillicothe, Ohio.

FOR SALE—Folding bow top, never used; will sell at bargain. Address Richard Massey, Birmingham, Ala.

AUTOCAR, type 8, with four cylinder 3 1/4 x 4 Rutherford engine, magneto and battery ignition, McCord force feed oiler, cape top, Rushmore lamps, extra tubes, tools, etc.; good condition. Also Remy four-cylinder magneto and coil (new). Thomas H. Halton, Allegheny Ave. and C St., Philadelphia, Pa.

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FOR SALE—\$395. Hoffman 1903 touring car. Seats four people. Detachable tonneau. A. S. Rice, Genoa Junction, Wis.

FOR SALE—A number of second hand autos in first class condition. A. H. Ekbergh, 907 Nicollet Ave., Minneapolis, Minn.

FOR SALE—2 cy. 20 H. P. Winton, with extension cape top and glass front; an exceptional bargain. H. G. M., care MOTOR AGE.

FOR SALE—1904 Winton; elegant condition; have bought Model A Winton. C. E. Wilkins, Dewey Hotel, Omaha, Neb.

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new semi-flash boiler that can't burn; guarantee first class condition throughout; sell at bargain; haven't time to run it. J. C. Donahue, Uniontown, Pa.

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ALL KINDS RUBBERINE FILLED are puncture proof; give twice the service, saving delays; resiliency retained; get sample and prices. Also new and second-hand tires. Automobile Palace, 152 W. Jackson Blvd., Chicago.

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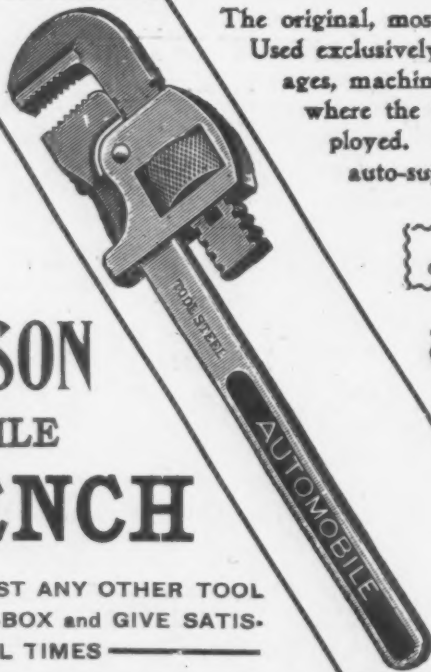
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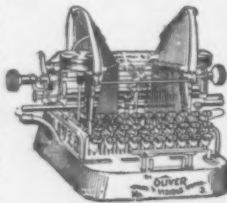
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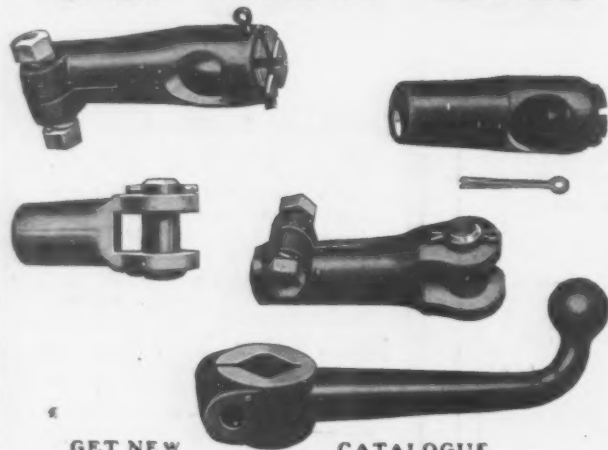
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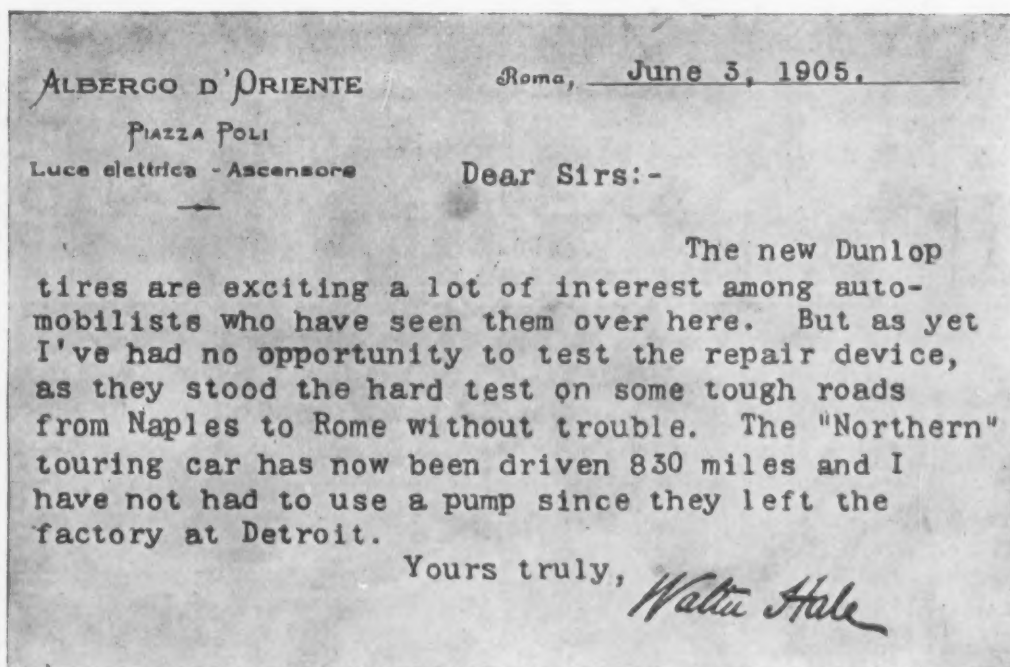
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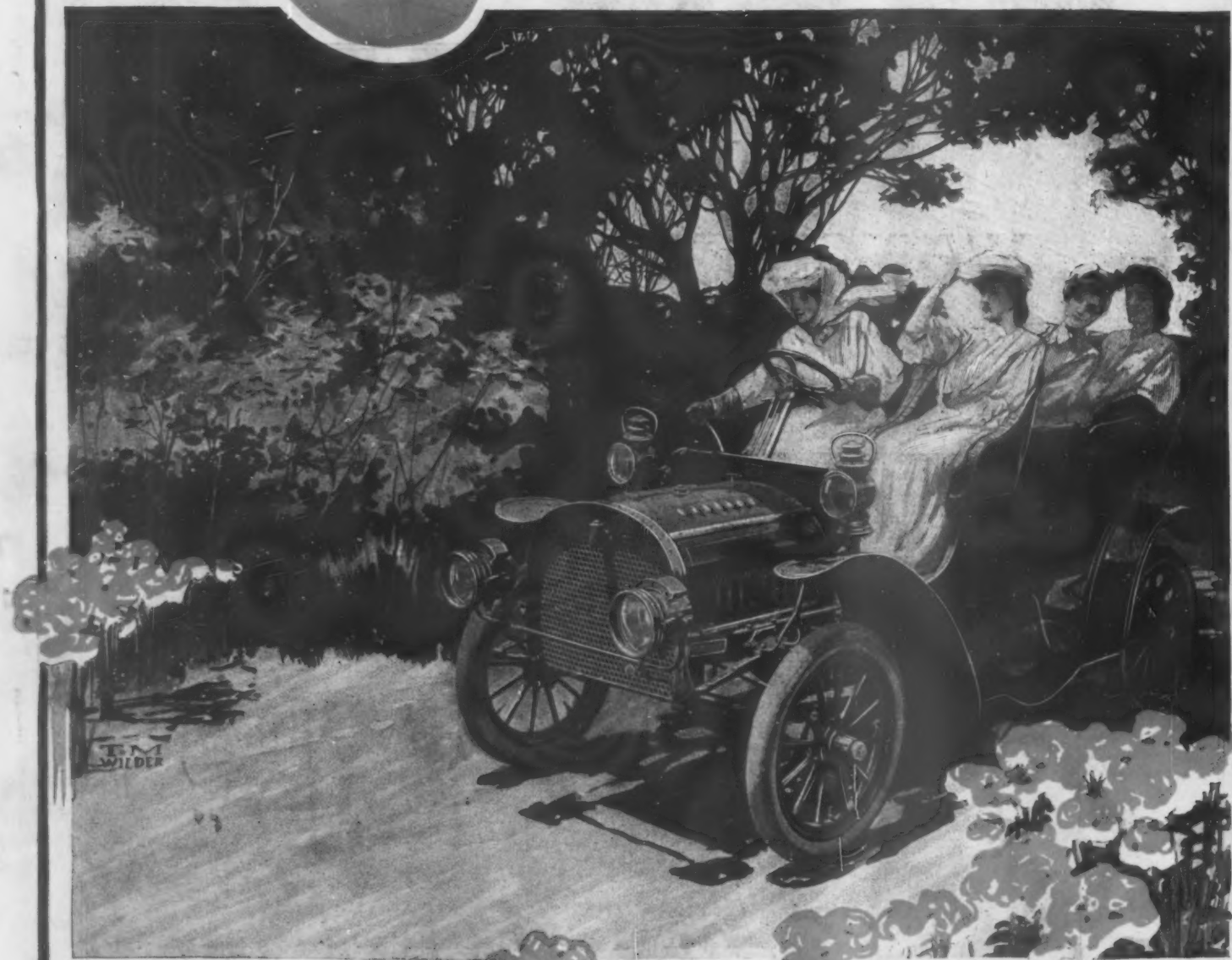
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